

COMPUTING RESEARCH NEWS



Computing Research Association
Uniting Industry, Academia and Government to
Advance Computing Research and Change the World.

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CRN At-A-Glance

Message from the CRA Board Chair

To the computing research community -

From my calendar, March 4, 2020: Working on a Mobicom submission, meeting a faculty candidate one-on-one, meeting with two students for an ongoing research project, meeting with the undergraduate lead for the Bits of Good student organization, talking by phone to a department chair about a two-body opportunity. Anticipating my younger daughter coming home for spring break. Going to yoga.

4 weeks later: BlueJeans presentations by three project participants, BlueJeans faculty candidate talk, Skype research meeting with two students on same ongoing research project, Zoom call about CRA strategic planning, BlueJeans student presentation for Bits of Good organization, one more BlueJeans meeting. Daughter is home for good. Yoga by YouTube.

Much is the same. Surprisingly much is the same. But also everything is different.

Read more [here](#).

2020 Board Election Results and New Appointed Board Members

CRA members have elected three new members to its Board of Directors: Alex Aiken, Cindy Bethel and Fatma Özcan. There have also been changes to the appointed members to the board. Kathleen Fisher has been appointed the new ACM representative, replacing Mary Hall and joining Alexander Wolf. Beginning July 1, Liz Bradley will replace Mark Hill as the CCC Chair and representative on the board.

See page 3 for full article.

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Message from the Board Chair

To the computing research community -

From my calendar, March 4, 2020: Working on a Mobicom submission, meeting a faculty candidate one-on-one, meeting with two students for an ongoing research project, meeting with the undergraduate lead for the Bits of Good student organization, talking by phone to a department chair about a two-body opportunity. Anticipating my younger daughter coming home for spring break. Going to yoga.

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Much is the same. Surprisingly much is the same. But also everything is different.

I was thinking about what is worth saying here that you aren't already hearing in many other places, and it came down to this: we are a community, and communities take care of each other in a crisis. For us - the computing research community - that means watching out for and assisting, where possible, those who are disproportionately affected by COVID-19 and the attendant disruptions to our work of teaching and research. In our community, this means junior faculty, postdocs, and graduate students. Starting an academic research career is hard; COVID is adding the stress of work-life imbalance, delays in receiving lab equipment, limited opportunity to work closely with new students. Finishing a PhD and launching into the research job market is hard; COVID is disrupting hiring processes and plans. Being a graduate student can be a lonely experience the best of times, now compounded by shelter-in-place orders.

If you have the capacity to do so, please reach out to check in with those in your sphere who you normally mentor. Expand your outreach to those you could mentor but don't normally. Offer listening and advice on how and what to prioritize. Provide assurances that the long tail of this disruption will be understood and accounted for in program committees, proposal reviews, teaching evaluations, promotion and tenure processes. And when the time comes, make good on that assurance.

Please stay safe.

Ellen Zegura, CRA Board Chair

CRA Conference at Snowbird

CRA continues to monitor the situation concerning COVID-19 and its potential impact on our upcoming CRA's Conference at Snowbird, July 21-23, 2020. At the moment, the circumstances still remain too uncertain for us to make any decisions about whether the conference will take place as planned.

We believe there is great value in bringing together the leadership of the computing research community in-person at Snowbird and will do all that we can to make that happen this July. A draft of the schedule can be found [here](#). But, obviously, health and safety concerns are paramount and we plan to heed Federal, State and local guidance about travel and public gatherings.

While we are not yet sure when we will make the decision to go ahead with the conference as in the past or modify it in some form, our intention is to decide with sufficient time for those who plan to attend to make their arrangements. Until then, it may be worthwhile to hold off on making travel plans.

If you have any questions about the conference, please direct them to snowbird@cra.org.

2020 Board Election Results and New Appointed Board Members

CRA members have elected three new members to its Board of Directors: Alex Aiken, Cindy Bethel and Fatma Özcan. Nancy Amato, Carla Brodley, Dan Grossman and Kim Hazelwood were re-elected to the CRA board. Mary Hall and Mark Hill, who held non-elected positions on the board, have also been elected. All of their terms run from July 1, 2020 through June 30, 2023. CRA would like to thank everyone who agreed to run this year.

There have also been changes to the appointed members to the board. Kathleen Fisher has been appointed the new ACM representative, replacing Mary Hall and joining Alexander Wolf. Beginning July 1, Liz Bradley will replace Mark Hill as the CCC Chair and representative on the board.

Retiring from the board as of June 30, are Susan Davidson, Brent Hailpern, Susanne Hambrusch, and Barbara Ryder. CRA thanks them all for contributions during their service on the board.



Alex Aiken

Alex Aiken is the Alcatel-Lucent Professor of Computer Science at Stanford. He received his Bachelor's degree in computer science and music from Bowling Green State University in 1983 and his Ph.D. from Cornell University in 1988. Aiken was a research staff member at the IBM Almaden Research Center (1988-1993) and a professor in the EECS department at UC Berkeley (1993-2003) before joining the Stanford faculty in 2003. His research interest is in areas related to programming languages. He is an ACM Fellow, a recipient of ACM SIGPLAN's Programming Languages Achievement Award and Phi Beta Kappa's Teaching Award, and a former chair of the Stanford Computer Science Department.



Cindy Bethel

Cindy L. Bethel, Ph.D. (IEEE and ACM Senior Member) is a professor in the Computer Science and Engineering Department and holds the Billie J. Ball Endowed Professorship in Engineering at Mississippi State University (MSU). She is currently serving in the role of special assistant vice president (intern) for the MSU Office of Research and Economic Development. She was the 2019 U.S. Fulbright Senior Scholar sponsored by the University of Technology Sydney. She is the director of the Social, Therapeutic, and Robotic Systems (STaRS) lab and a research fellow with the MSU Center for Advanced Vehicular Systems Human Performance Group and the MSU Social Science Research Center. Cindy has managed over \$12 million dollars in research funding since starting as an assistant professor at Mississippi State University in August 2011. She has published over 96 peer reviewed journal articles, conference papers, and workshop papers in prestigious venues. She has been active in her professional research community serving on the Steering Committee for the ACM/IEEE International Conference on Human-Robot Interaction (HRI) and the ACM Transactions on Human-Robot Interaction (2015-2019). She was an NSF/CRA/CCC Computing Innovation Postdoctoral Fellow in the Social Robotics Laboratory at Yale University. From 2005 - 2008, she was a National Science Foundation Graduate Research Fellow and was the recipient of the 2008 IEEE Robotics and Automation Society Graduate Fellowship. She graduated in August 2009 with her Ph.D. in computer science and engineering from the University of South Florida. Her research interests include human-robot interaction, human-computer interaction, robotics, and artificial intelligence. Her research focuses on applications associated with robotic therapeutic support, information gathering from children, and the use of robots for law enforcement, search and rescue, and military.

2020 Board Election Results *(continued)*



Liz Bradley

Liz Bradley received the S.B., S.M., and Ph.D. degrees from the Massachusetts Institute of Technology in 1983, 1986, and 1992, respectively, including a one-year leave of absence to compete in the 1988 Olympic Games. She has been with the Department of Computer Science at the University of Colorado at Boulder since January of 1993; she also holds appointments and affiliations with a variety of engineering departments. Her current research activities focus on nonlinear dynamics and chaos, as well as scientific computation and AI. She is the vice chair of the CCC Council and a member of Eta Kappa Nu, Tau Beta Pi, and Sigma Xi, as well as the recipient of a National Young Investigator award, a Packard Fellowship, and the 1999 College of Engineering teaching award.



Kathleen Fisher

Professor Kathleen Fisher is chair of the Computer Science Department at Tufts University. Previously, she was a program manager at DARPA and a principal member of the technical staff at AT&T Labs Research. She received her Ph.D. in computer science from Stanford University. Fisher is a Fellow of the Association of Computing Machinery (ACM) and a Hertz Foundation Fellow. Service to the community has been a hallmark of her career. She served as chair of the ACM Special Interest Group in Programming Languages (SIGPLAN) and as program chair for three of SIGPLAN's marquee conferences: Programming Language Design and Implementation (PLDI), Object-Oriented Programming Languages, Systems, and Applications (OOPSLA), and the International Conference on Functional Programming (ICFP). She has also served as associate editor of ACM's Transactions on Programming Languages and Systems (TOPLAS) and as an editor of the Journal of Functional Programming. Fisher has long been a leader in the effort to increase diversity and inclusion in Computer Science: she was co-chair of the Computing Research Association's Committee on the Status of Women (CRA-W) for three years, and she co-founded SIGPLAN's Programming Language Mentoring Workshop (PLMW) Series. Kathleen is a recipient of the SIGPLAN Distinguished Service Award. She is chair of DARPA's ISAT Study Group and a member of the Board of Trustees of Harvey Mudd College.



Fatma Özcan

Fatma Özcan is a principal research staff member and a senior manager at IBM Almaden Research Center. Her current research focuses on platforms and infrastructure for large-scale data analysis, knowledge graphs, democratizing analytics via NLQ and conversational interfaces to data, and query processing and optimization of semi-structured data. Özcan received her Ph.D. in computer science from University of Maryland, College Park, and her B.Sc. in computer engineering from METU, Ankara. She has over 19 years of experience in industrial research, and has delivered core technologies into many IBM products. She is the co-author of the book *Heterogeneous Agent Systems* and co-author of several conference papers and patents. Özcan is an elected member of the SIGMOD Executive Committee, and is on the board of trustees for the VLDB Endowment. She is an ACM Distinguished Member.

Expanding the Pipeline: CRA-WP Grad Cohort Workshop for URMD – An inclusive environment for diverse graduate students in computing



CRA-WP

Computing Research Association
Widening Participation

By Shar Steed, CRA Communications Specialist



representatives. A major highlight was the Friday evening reception sponsored by Google, featuring music, a photo booth and delicious barbeque. Students also had numerous mentoring opportunities including one on one sessions for career advice and resume/CV feedback.

At this event, CRA emphasized its dedication to providing an inclusive environment by promoting its [Code of Conduct](#), making sure all attendees were aware of expectations and how to report violations.

On March 5-7, 2020 CRA-WP hosted the 2020 Grad Cohort for Underrepresented Minorities and Persons with Disabilities (URMD) Workshop in Austin, TX. Now in its third year, the workshop brought together approximately 200 graduate students from groups that are underrepresented in computing (including Alaska Native, Black/African American, Hispanic, Native American, Native Hawaiian and other Pacific Islander, and/or Persons with Disabilities).^{*} Collectively, they represented a diverse set of computing-related research areas and more than 90 institutions. By developing meaningful connections with a focus on mentoring and community building, the workshop aims to increase representation from these groups in computing research. Graduate students also learn research skills and career strategies from experienced researchers and professionals.

This year's workshop was organized by program chairs Ramón Cáceres (Google), Lori Clarke (University of Massachusetts Amherst), Ayanna Howard (Georgia Institute of Technology), and Meredith Ringel Morris (Microsoft Research). During the opening session, the program chairs encouraged participants to take advantage of the opportunities available. An inspiring keynote "Fail Your Way to Success" by Armando Fox (University of California, Berkeley) detailed how he overcame professional failures, and shared how he navigated the challenging path to a successful career. Many students participated in the poster session, where they shared their research and received feedback from other participants, speakers, and sponsor

Are the Grad Cohort Workshops having an impact? In [videos](#) from the 2019 workshops, students, speakers, and sponsor representatives share their thoughts on the program's significant impact on them. And the CRA [Center for Evaluating the Research Pipeline](#) (CERP) has data that provides evidence that participants gain much from the opportunity to build community and fresh perspectives presented by speakers. Last fall, CERP published the infographic, "[How Do the Grad Cohort Workshops Measure Up? Past attendees of both Grad Cohort for URMD and Grad Cohort for Women weigh in.](#)"





Expanding the Pipeline *(continued)*

	Grad Cohort for URMD	Grad Cohort for Women	Neither
Positive, welcoming environment	100%	100%	0%
Safe space to discuss matters related to personal identity and intersectionality	95%	90%	0%
Frank conversations about issues that individuals and groups in computing face	95%	86%	0%
Ability to build lasting relationships with peers	95%	86%	0%
Ability to build lasting relationships with mentors	86%	71%	14%
Personal and career development-related topics important for current graduate students in computing	100%	100%	0%

Source: 2019, Center for Evaluating the Research Pipeline, Computing Research Association

Data displayed in the figure were collected using an online survey distributed to past participants of both the Grad Cohort for Underrepresented Minorities & Persons with Disabilities (URMD) and Grad Cohort for Women workshops in either or both of the 2018 and 2019 program years. The survey question used for this analysis was as follows: "Please select which workshop provides the following for participants. You may select one, both, or neither workshop." Choice option "Neither workshop" was exclusive, such that no other option could be selected when that choice was also selected.

Most of the respondents to the survey selected that the Grad Cohort workshops provide participants with:

- a positive, welcoming environment,
- personal career development-related topics important for current graduate students in computing,
- a safe space to discuss matters related to personal identity and intersectionality,
- the ability to have frank conversations about issues that individuals and groups in computing face, and
- the ability to build lasting relationships with peers and mentors.

Thank You, Sponsors!

The 2020 Grad Cohort for URMD Workshop is made possible through generous contributions by Association for Computing Machinery, Computing Research Association, National Science Foundation, Facebook, Google, Microsoft Research, a private foundation, AccessComputing, Intel, SIGARCH, SIGCHI, SIGCOMM, SIGGRAPH, SIGHPC, SIGIR, SIGKDD, SIGOPS, SIGPLAN, SIGSOFT, WICARCH, AnitaB.org, Bloomberg, D.E. Shaw Research, IEEE-CS, TCCA, Raytheon, SIGACT, SIGCSE, SIGMICRO, SIGMOBILE, and SRC.

This program is based upon work supported by the National Science Foundation under Grant Number (I246649). Any opinions, findings, and conclusions or recommendations expressed do not necessarily reflect the views of the National Science Foundation.

*Data from the upcoming 2019 CRA Taulbee survey indicate students from URM categories (Alaska Native, Black/ African American, Hispanic, Native American, Native Hawaiian and other Pacific Islander) represent 4% of students enrolled in Ph.D. programs.

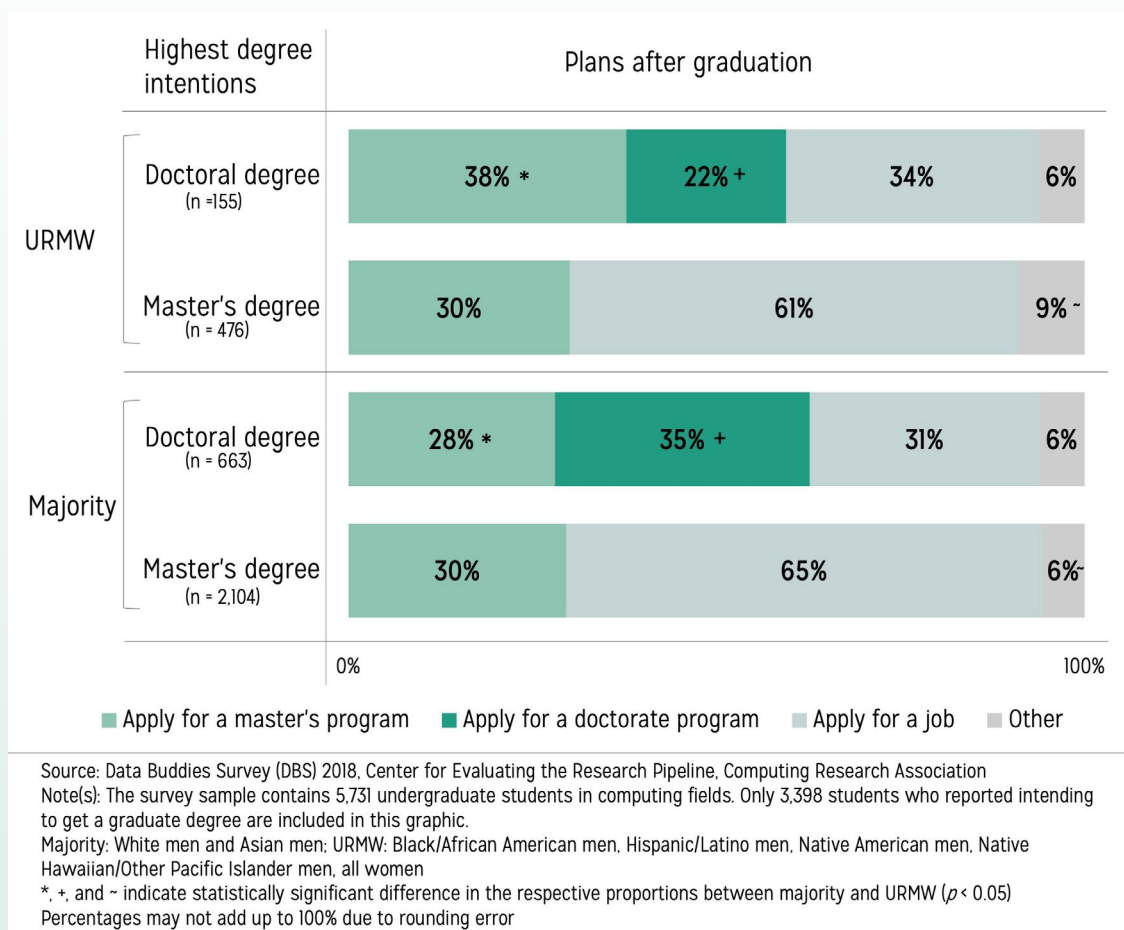
The Many Pathways to Graduate Education in Computing



CERP

Computing Research Association
Evaluation

By Burçin Tamer, Director of CERP



A healthy computing research workforce is critical for driving innovation in computing and technology. Advances in basic computing research is linked to many major technological advancements [1]. Without a wide pool of new researchers to sustain this workforce, it is inevitable for innovation in computing to slow down. Beyond maintaining a large pool of researchers, it is also important to ensure that these researchers reflect the diversity of the population they are embedded in.

We analyzed students' career plans immediately after receiving their bachelor's degree and their intentions for the highest degree they plan to pursue. Focusing on those students who are interested in pursuing a graduate degree, the analysis

found that there are multiple pathways students envision taking to receive a graduate education. Our analysis examined students who are underrepresented in computing (URMW) and those who constitute the majority separately to identify whether there are any differences in their career plans.

The graphic demonstrates that only about a third of the students who are interested in ultimately getting a master's degree plan on entering graduate school right after they graduate while more than 60% intend to first enter the workforce. Our analysis showed that there was not a difference between URMW and majority students in this regard.

Results for those students who are planning on getting a doctorate degree also showed a variation in how they

Graduate Student Mentors *(continued)*

anticipate reaching this goal. Of note, we found that URMW and majority students differ in terms of the direction of their path to a doctoral degree. While students who are underrepresented in computing are more likely to first apply for a master's degree, students who are the majority in terms of their racial/ethnic and gender identity are more likely to take a direct path to a doctoral program. Still, about a third of both groups plan on entering the workforce once they receive their bachelor's degree.

The reasons behind how students formulate these plans and factors that explain difference between students of different racial/ethnic and gender identities require further analysis. Additionally, while these students report intending to ultimately pursue a graduate degree, it is unclear whether they actually move from the workforce to graduate school or continue on to a doctoral program after receiving their master's degree.

References:

[1] National Research Council. 1995. *Evolving the High Performance Computing and Communications Initiative to Support the Nation's Information Infrastructure*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/4948>.

Notes:

- (1) The survey data used in this graphic were collected during fall 2018 by CERP via the Data Buddies Project.
- (2) Students were asked to report their plans immediately after they graduate and their highest degree intentions. Immediate plans included in the 'Other' category are: Apply for a certificate program, Create a start-up, Take a break from work and school, Another plan not best described above
- (3) The survey sample contains 5,731 undergraduate students in computing fields. Only 3,389 students who reported intending to get a graduate degree are included in this graphic.
- (4) Majority: White men and Asian men; URMW: Black/African American men, Hispanic/Latino men, Native American men, Native Hawaiian/Other Pacific Islander men, all women.
- (5) *, +, and ~ indicate statistically significant difference in the respective proportions between majority and URMW ($p < 0.05$)
- (6) Percentages may not add up to 100% due to rounding error

This analysis is brought to you by the CRA's Center for Evaluating the Research Pipeline (CERP). CERP provides social science research and comparative evaluation for the computing community. Subscribe to the CERP newsletter [here](#).

This material is based upon work supported by the National Science Foundation under grant numbers (CNS-1246649, CNS 1840724, DUE-1431112, and DUE 1821136). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

CCC @ AAAS 2020 – New Approaches to Fairness in Automated Decision Making

By CCC Staff

The last decade has seen the increased use of machine learning and data science to make decisions—from figuring out which YouTube video to recommend to deciding whom to give a loan, automated decisions are now everywhere. However, as deployment of these decision-making systems has increased so too have concerns about the transparency of the component algorithms and the fairness of their outcomes. This topic was the subject of the **New Approaches to Fairness in Automated Decision Making** scientific session at the 2020 **American Association for the Advancement of Science (AAAS) Annual meeting** in Seattle, Washington one month ago.

The session was moderated by **Computing Community Consortium (CCC)** Director **Ann Schwartz Drobni** and included:

- **Sampath Kannan** (University of Pennsylvania) who explained the basics of machine learning (ML) and why fairness (or a lack thereof) is a concern in the use of ML-based systems in his presentation **Decision Making by Machine Learning Algorithms**;
- **Moritz Hardt** (UC Berkeley) who discussed the different possible goals of fairness and how algorithms should be designed to meet these goals in his presentation **New Approaches to Fairness in Automated Decision Making**;
- **Toniann Pitassi** (University of Toronto) who demonstrated a mathematical definition of fair classification and reviewed the tradeoffs to pursuing different kinds of fairness in her presentation **Recognizing and Overcoming Frictions to Fairness**;
- and **Jaime Morgenstern** (University of Washington) as the discussant, who tied together the concerns raised in the three talks and led the Q&A.



Sampath Kannan



Jaime Morgenstern



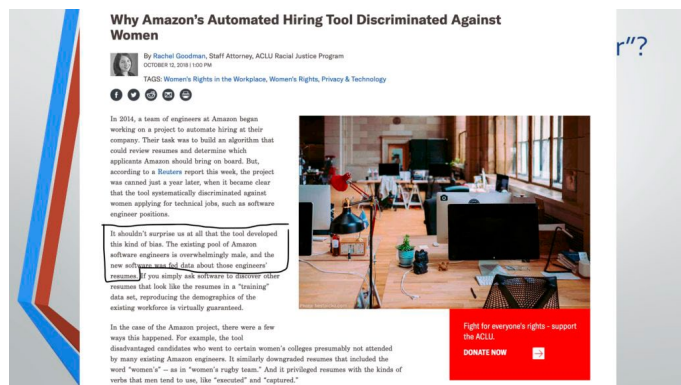
Moritz Hardt



Toniann Pitassi

As an example of the impact of bias in automated systems, Sampath Kannan highlighted a now discontinued Amazon hiring tool that discriminated against women applying to technical jobs. [1] Amazon's model was based on data from the previous ten years of hiring and these hires had been predominantly men.

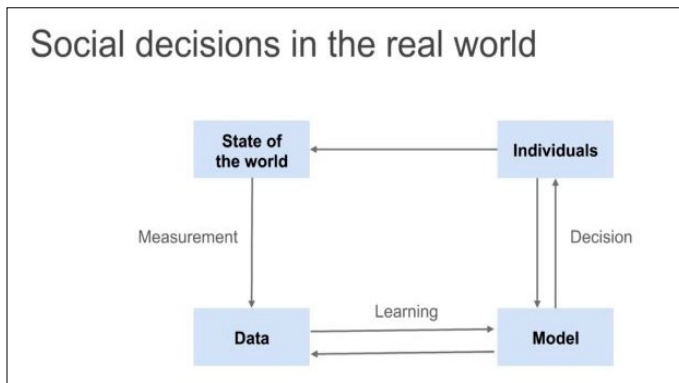
Subsequently the hiring software “learned” to favor men over women, and the system “penalized resumes that included the word “women’s,” as in “women’s chess club captain” and lowered the rankings of graduates from two all-women’s colleges.[2] In order to counter these effects, Kannan argued, we must be aware of potential data feedback loops. We must also recognize that algorithms trained on minority populations might be less accurate due to a lack of data. Algorithms may need to explicitly take into account group membership in order to be fair. In any case, forbidding an algorithm to use sensitive attributes like minority status does not work because there may still be proxy variables that correspond to this status (e.g. zip code as a proxy for race).



“Why Amazon’s Automated Hiring Tool Discriminated Against Women”

Automated Decision Making (*continued*)

Building off of this idea, Moritz Hardt opened his talk with a quote from physicist, Ursula Franklin, who said: “[T]echnologies are developed and used within a particular social, economic, and political context. They arise out of a social structure, they are grafted on to it, and they may reinforce it or destroy it, often in ways that are neither foreseen nor foreseeable.” Franklin was speaking in the 80s but the sentiment applies to modern ML-based systems—the state of the world influences the measurements and data from which the model learns, the model will then influence individuals and the state of the world, this will in turn loop back around to influence the measurement and data once again.



The impact of social decisions in the real world.

As an example of the influence of society on causality, Hardt discussed the discrepancy between men and women’s admission rates to University of California, Berkeley graduate schools in 1973. This might seem oddly specific but is the subject of a famous paper on sex bias by Bickel, Hammel, and O’Connell (see footnote) [3]. Among the top six departments at UC Berkeley in 1973, the male acceptance rate was 44% and the female acceptance rate was 30%. However when examined on a department by department level the acceptance rate of women was generally about the same as the acceptance rate of men. What then caused this discrepancy?

Analysis by department

Department	Men		Women	
	Applied	Admitted (%)	Applied	Admitted (%)
A	825	62	108	82
B	520	60	25	68
C	325	37	593	34
D	417	33	375	35
E	191	28	393	24
F	373	6	341	7

Admission rates to University of California, Berkeley graduate schools in 1973.

Bickel’s explanation was that “The bias in the aggregated data stems not from any pattern of discrimination on the part of admissions committees, which seems quite fair on the whole, but apparently from prior screening at earlier levels of the educational system. Women are shunted by their socialization and education toward fields of graduate study that are generally more crowded, less productive of completed degrees, and less well funded, and that frequently offer poorer professional employment prospects.” [3] In short, due to prior influences women more frequently applied to departments like humanities, which had greater numbers of applicants and could accept fewer students, than departments like engineering, which had higher budgets, fewer applicants, and could accept a greater number of students. Hardt contended that perpetuating such feedback loops is a major risk of using automated decision making systems and the architects of these systems must be careful to guard against that.

Finally, Toniann Pitassi presented a more mathematical view of fairness. When building a predictive model, for some feature vector, (e.g. test scores), that corresponds to an actual value of as a function of (e.g. student gets into a certain college), you want to be able to learn a classifier that gives you the predicted value, that is accurate on 99% of the population. Taking fairness into account you also need to ensure that the classifier is “fair” with respect to where is some protected group. Pitassi said that the “most common way to define ‘fair’ is to require some invariance/ independence with respect to the sensitive attribute.” Pitassi presented three main ways to define fairness mathematically:



Automated Decision Making (*continued*)

- **Demographic parity**, $\hat{Y} \perp A$, says that the value of A should not be able to tell you anything about the predicted value, \hat{Y} (e.g. the race of a student should not influence their likelihood of getting into a certain college);
- **Equalized odds**, $\hat{Y} \perp A \mid Y$, means that the true positive rate and the false positive rate are the same for both the protected and non-protected group (e.g. an equal amount of “qualified” and “unqualified” students from each demographic get into a certain college);
- **And equalized calibration**, $Y \perp A \mid \hat{Y}$, is the condition where outcomes are independent of protected attributes (e.g. the percentage of students who achieve the necessary test scores and then get into a certain college should be same across demographics).

Unfortunately, these three definitions are generally incompatible outside of nontrivial cases—you cannot have equalized odds and equalized calibration simultaneously; therefore, a conscious decision must be made when designing algorithms on which kind of fairness is appropriate for the model in questions.

The Q&A offered attendees of the session the opportunity to hear more from the speakers. One question, asked by a software engineer, addressed the economic incentives for fairness. The attendee asked, “What is the business argument for testing fairness in software development when your primary priority is profits?” In response, Jamie Morgenstern replied that if your product doesn’t work well for a certain population then your product doesn’t work. This should be viewed as an opportunity to improve your product and make it useable, and therefore more profitable, for a broader population.

View all the slides and learn more about the “New Approaches to Fairness in Automated Decision Making” session on the [CCC @ AAAS webpage](#).

Example

COMPAS : risk assessment program

Propublica concluded that COMPAS is biased:

- More blacks incorrectly predicted to recidivate

	Black	White
Accuracy	64.9	65.7
False Positive Rate	40.4	25.4
False Negative Rate	30.9	47.9

COMPAS risk assessment program was concluded to be biased by Propublica.

IS CLASSIFIER BIASED ?

Propublica says :

Blacks face higher false positive rates
so violates equalized odds

Northpointe's defense:

Scores satisfy equalized calibration
and we can't have both.

Is the classifier biased?



Automated Decision Making (*continued*)

Related Links:

1. *Learning Adversarially Fair and Transferable Representations*, Toniann Pitassi et al. <https://www.cs.toronto.edu/~toni/Papers/lafr.pdf>
 2. *Algorithmic and Economic Perspectives on Fairness*, CCC workshop report <https://cra.org/ccc/wp-content/uploads/sites/2/2019/01/Algorithmic-and-Economic-Perspectives-on-Fairness.pdf>
 3. *The Frontiers of Fairness in Machine Learning*, CCC workshop report <https://cra.org/ccc/wp-content/uploads/sites/2/2018/01/The-Frontiers-of-Fairness-in-Machine-Learning.pdf>
 4. *Privacy-Preserving Data Analysis for the Federal Statistical Agencies*, CCC white paper <https://cra.org/ccc/wp-content/uploads/sites/2/2015/01/CCCPrivacyTaskForcePaperRevised-FINAL.pdf>
 5. *Towards a Privacy Research Roadmap for the Computing Community*, CCC white paper <https://cra.org/ccc/wp-content/uploads/sites/2/2015/01/CCC-National-Privacy-Research-Strategy.pdf>
 6. *Big Data, Data Science, and Civil Rights*, CCC white paper <https://cra.org/ccc/wp-content/uploads/sites/2/2017/06/BigDataDataScienceandCivilRights-v6.pdf>
 7. *Afternoon Session: Individuals, Groups, Pattern Recognition and Rich Data*, Simons Institute via Youtube: <https://www.youtube.com/watch?v=7rolh-SrBAo>
 8. *The ethical algorithm*, Brookings Institute via Youtube: https://www.youtube.com/watch?v=PvUOMaBf9X4&feature=emb_title
[b704/3d57d399bd28b2d3e84fb9d342a307472458.pdf](https://www.youtube.com/watch?v=PvUOMaBf9X4&feature=emb_title)
- [1] Rachel Goodman, "Why Amazon's Automated Hiring Tool Discriminated Against Women," *ACLU Blog*, 2018. <https://www.aclu.org/blog/womens-rights/womens-rights-workplace/why-amazons-automated-hiring-tool-discriminated-against>
- [2] Jeffrey Dastin, "Amazon scraps secret AI recruiting tool that showed bias against women," *Reuters*, 2018. <https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G>
- [3] P. J. Bickel, E. A. Hammel, J. W. O'Connell, Sex Bias in Graduate Admissions: Data from Berkeley, 1975. <https://pdfs.semanticscholar.org/b704/3d57d399bd28b2d3e84fb9d342a307472458.pdf>

CCC @ AAAS 2020 - Using Computing to Sustainably Feed a Growing Population

By CCC Staff



Chandra Krintz



Ranveer Chandra



Patrick S. Schnable



Lucas Joppa



Shashi Shekhar



James Hodson

As the global population continues to grow, and climate change and pollution lead to environmental degradation, ensuring the future of agriculture and food production becomes increasingly imperative. What role can computing research play in alleviating these challenges going forward? The impact of computing technology on the future of agriculture and plant science was the subject of the **Using Computing to Sustainably Feed a Growing Populations** scientific session at the 2020 **American Association for the Advancement of Science (AAAS) Annual meeting** in Seattle, Washington one month ago.

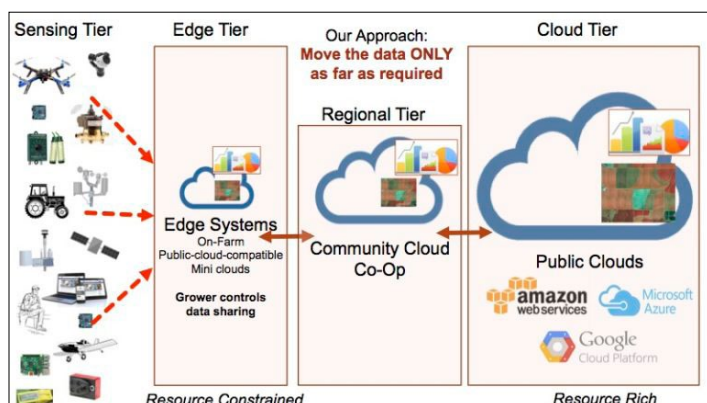
This session was moderated by **Lucas Joppa**, the Chief Environmental Officer at Microsoft, and co-organized by **Shashi Shekhar** (CRA Board Member) and **James Hodson** (AI for Good Foundation). It featured the following speakers:

- **Chandra Krintz** (Professor, UC Santa Barbara), who highlighted the work of the **UCSB SmartFarm**, “an open source, hybrid cloud approach to agriculture analytics,” in her presentation **SmartFarm - Hybrid Cloud IoT Systems for Future Agriculture**;
- **Ranveer Chandra** (Chief Scientist, Microsoft Azure Global), who shared the work of the **Microsoft FarmBeats** system, an end-to-end data-driven farming systems that leverages AI and the internet of things (IoT), in his presentation **AI and Internet of Things for Agriculture**;
- and **Patrick S. Schnable** (Distinguished Professor, Iowa State University), who discussed his research projects to improve and predict crop performance in diverse environments in his presentation **Advancing Plant Science with Predictive Models and Large-scale Phenotyping**.

Chandra Krintz opened the session with an explanation of **precision agriculture**—the practice of using detailed observation and measurement in an agricultural setting to control and optimize return on inputs—and its benefits. Computing technology is a component of modern precision agriculture as it enables more detailed observation and precise control of machinery through sensors and IoT enabled devices. Additionally, AI and data science increase the accuracy of predictions and allow for more complex analysis of observational data. Farms must now use cloud computing resources in order to manage the large numbers of sensors, devices, and data that are required. However, as Krintz explained, accessing the cloud is a challenge due to limited Internet access and bandwidth. IoT is also difficult to use on a farm because many sensors are resource constrained and they must monitor a considerable amount of physical space.

To counter these obstacles, Krintz and UCSB SmartFarm move the cloud closer to the data through on-farm edge systems. UCSB SmartFarm also offers the SPOT Platform, a free and open source application that is designed for on the farm use and is 100 times more power efficient than existing cloud/edge solutions. Krintz concluded her presentation by calling for increased collaborations across disciplines and within academia, government, and industry to continue innovation within precision agriculture.

Using Computing to Feed a Population (*continued*)

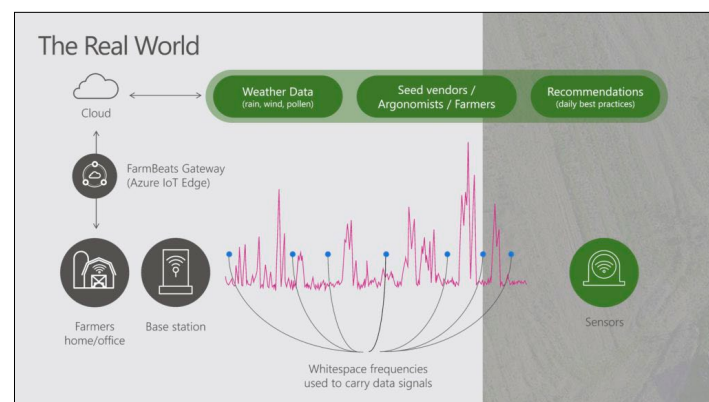


Sensing to cloud tier on a farm.

Ranveer Chandra further explained the pressing challenges facing the agricultural sector. According to Chandra, in order to keep up with population growth we will need 70% more food by 2050, and according to data from the United Nations currently about 10% of people in the world are undernourished[1]. Ranveer started the **Microsoft's FarmBeats project**, which leverages AI and IoT to improve farm productivity and lower costs. One innovation FarmBeats has made is the use of TV white space frequencies to carry data signals and improve farms' access to the Internet. Microsoft's Networking Over White Spaces (KNOWS) project has been studying this problem for over a decade to connect people and FarmBeats has been able to put it into practice on the farm to connect things.

Another example of novel computing research to assist on the farm is the use of Wi-Fi to measure the amount of moisture in soil. Obviously, soil moisture matters for crop output and being able to accurately measure and track levels of moisture can help farmers improve yields. Traditional soil moisture sensors are expensive, however Wi-Fi is cheap and easily available. Ranveer Chandra and Jian Ding from Microsoft Research have proposed the Soil Measurements Using RF or SMURF system, which "uses Wi-Fi devices in the unlicensed 2.4 GHz of spectrum, with multiple antennas placed at different depths in the soil. A wireless transmitter...emits signals that are received by these antennas in soil. The receiver uses signals on multiple antennas to compute soil permittivity. The results are then transmitted back to the soil surveying device, which then computes the soil moisture and soil EC values at the location of the antenna." [2] Learn more about this

idea in the **Estimating Soil Moisture and Electrical Conductivity Using Wi-Fi** paper by Ranveer Chandra and Jian Ding.




How FarmBeats uses TV white space.

Finally, agronomist Pat Schnable touted the promise of predictive models for plant science. With sufficient genotyping, phenotyping, and environmental data we will be able to build predictive models to improve the accuracy of selection in plant breeding programs, enhance our ability to breed crops for future environments, and increase yields and yield stability. He also described two novel phenotyping tools. A nitrate-specific sensor offers the promise of being able to more accurately advise farmers on appropriate levels of fertilization, thereby increasing both farmer profitability and the sustainability of agriculture. The "plant tattoo" is a novel sensor made of graphene oxide. Exposure to water vapor changes the conductivity of the graphene oxide, thus allowing for accurate measurements of crop transpiration, thereby offering the possibility of breeding more water-efficient crops and fine-tuning irrigation schedules. Schnable also highlighted the **Genomes to Fields (G2F) Initiative**, a public-private partnership he is involved with that works "to support translation of maize genomic information for the benefit of growers, consumers and society." Learn more about the G2F funded projects on **their webpage**.


During the Q&A, Ranveer Chandra was asked if there were any regulatory challenges with getting TV white space approved for use in farms. Ranveer said that the FCC has approved this[3] and that FarmBeats is working with regulators in other countries to get TV white space approved for use on the farm.

Using Computing to Feed a Population (*continued*)



The Genomes to Fields Initiative

- Multi-state partnership led by ISU, Univ of WI and Iowa Corn to develop a “living laboratory” focused on understanding the genetics of maize performance across environments
- A large, multi-state, multi-year dataset of maize phenotype data has been made publicly available and is enabling researchers to identify relationships among genes, the environment and crop performance



The Genomes to Fields Initiative.

The panel was also asked what the scientific community can do to build resilient plants in the face of climate change. Chandra Krintz replied that though climate change might limit crop growth in some areas, non-traditional farming areas might become conducive to growing and computing could be helpful to identify and develop those areas for growing crops in the future.

View all the slides and learn more about the “Using Computing to Sustainably Feed a Growing Population” session on the [CCC @ AAAS webpage](#).

CCC Welcomes Maddy Hunter

By CCC Staff



The Computing Community Consortium (CCC) is delighted to welcome Maddy Hunter!

The Computing Research Association (CRA) recently hired Maddy as a Program Associate for the CCC subcommittee. In this role, she provides support for the CCC by handling administrative and logistical matters, such as planning for meetings, visioning workshops, outreach activities, and committee support. Maddy will also interact with key constituents, including members of the research community, and policymakers, to further enrich the awareness of CRA, its committees, its mission, and its services.

“CCC is thrilled to have Maddy Hunter join us as a Program Associate. Her experience in management, logistics, and writing should further enhance CCC in its mission to catalyze the computing research community and enable the pursuit of innovative, high-impact research.”

-Mark D. Hill, CCC Chair

Previously, she was an IT Administrative Specialist for DataSource, where she worked with Automated Background Investigation Software (ABIS) to process security clearances for government workers. Maddy received bachelor's degrees in professional writing and political science from Miami University. In her free time, she enjoys napping, painting and trying new foods.

Computing Researchers Respond to COVID-19: Running a Virtual Conference

By CCC Staff

In two weeks you are hosting 1,800 scientists, engineers, designers, and other experts at a five day conference but then the U.S. Centers for Disease Control and Prevention suddenly encourages Americans to practice “social distancing” measures to prevent the further spread of COVID-19. What do you do?

You move it online.

That is what the IEEE VR conference chairs decided to do last month, led by **Blair MacIntyre**, a professor in Georgia Tech’s **School of Interactive Computing** and IEEE VR conference co-chair, and Kyle Johnsen, an associate professor in the University of Georgia’s **College of Engineering**, when they transitioned the **IEEE VR 2020 Conference to an all-virtual event**. Working non-stop for two weeks, with the help of the entire conference committee and support from Mozilla and dozens of volunteers, they pulled together the technology to support a full scale virtual conference.

“We were planning on a small experiment with online attendees to investigate the use of VR to make conferences more accessible and sustainable. Suddenly we needed to ramp up to accommodate everyone across all traditional conference activities,” MacIntyre said.

The entire five-day event was done using a combination of commercial (Slack, Zoom, Sli.do, Twitch) and custom services (especially for video streaming), with a social virtual experience hosted on a custom installation of **Mozilla Hubs**, an online platform for social VR experiences. We chose Hubs because it is web based and open-source, allowing it to be easily customized and accessible from almost any device (VR or not) using a modern web browser.

IEEE VR marks the first time that a major academic conference of this scale (almost 2000 participants) moved online and depended solely on a virtual environment platform to replicate both the 1:1 and social networking sessions that are an essential part of conferences.

If you are considering moving your conference online, here are some tips from Blair:

- If you want to consider **Mozilla Hubs**, you should email hubs@mozilla.com. Mozilla devoted significant resources to help run IEEE VR, and has learned a lot about using their platform for these sorts of events.
- To support talks with no public streaming, **Zoom** or other video conferencing services may be fine. Just buy the big webinar versions. There were some issues with streaming Zoom to **Twitch** when we used it, but you could try doing that. If you have the people and machines on a network, you could run your own OBS machines to make the streams more reliable. Or use something like **restream.io**, which will let you distribute to multiple platforms.
- Much of the interactive stuff (posters, etc) leveraged Hubs, and because Hubs spaces are currently limited to small groups of 20-25 people, replicated the kind of small group discussions we wanted these parts of the program to have.
- If you decide to try and use social spaces for interactive parts of the program, plan ahead to recruit plenty of volunteers to act as helpers and moderators. Do not underestimate the number of people needed to make these spaces run smoothly, nor the time taken to train everyone.
- To do video co-watching in Hubs, we had to run our own media server. This added to the complexity and cost, but is possible if you need to. Companies such as PaperSpace.com and ServerRoom.net are ones we tried out for the conference; we used ServerRoom.net for our video server.
- We used Slack to communicate messages, but if you choose to use it make sure you remind people to sign up for it so they don’t miss messages.

**CCC**Computing Community Consortium
Catalyst

Virtual Conference (*continued*)

As a summary, contact Mozilla if you want to use Hubs, but you can do the basic stuff pretty easily with Zoom. If you want to stream out to Twitch, prepare for significant work and investment.

At the **Computing Community Consortium** (CCC) we know that everyone is dealing with a lot in these unprecedented times. We are continuing to work on behalf of the computing research community to catalyze research, but we also want to provide ways to help the community. This post is the first **in a series of posts** about ways computing researchers are using computing to adapt and help in these times. We hope you find something that may help you, either now or in the future.

Recent posts in the Computing Researchers Respond to COVID-19 Series:

Operationalizing AI in Health

Personal Protective Equipment Fabrication

Decontaminating N95 Masks

Staying Connected

Misinformation

Voxel5I: A Means of Tracking Social Distancing

Additional posts will be published [here](#).

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Column Editor

Expanding the Pipeline
Patty Lopez, Intel

Professional Opportunities

Amherst College

Visiting Assistant Professor of Computer Science

The Department of Computer Science invites applications for a full-time position at the rank of visiting assistant professor, beginning on July 1, 2020. This is a one-year appointment, with the possibility of renewal for two additional years. Within the last decade, Amherst College has profoundly transformed its student body in terms of socioeconomic status, ethnicity, race, and nationality. Today, nearly one-quarter of Amherst's students are Pell Grant recipients; 43 percent of our students are domestic students of color, and 10 percent of our students are international students. The teaching responsibility is two courses per semester. We seek a colleague who is committed to excellence in undergraduate computer science education and who is comfortable teaching courses in a variety of areas. Amherst College is located in Western Massachusetts, about a two-hour drive from Boston and about three hours from New York City. The college is part of the Five College Consortium, which supports collaborations with nearby Hampshire, Mount Holyoke, and Smith Colleges, and with the University of Massachusetts. Students and faculty enjoy top-notch computing facilities, including technology-equipped classrooms, multimedia laboratories, and a high-performance computing cluster.

Applicants are asked to submit the following information electronically to <https://apply.interfolio.com/74764>:

a cover letter; curriculum vitae; three confidential letters of recommendation; and, a brief teaching statement, which should include a description of their teaching experience and a discussion of what courses they feel prepared to teach.

Review of applications will begin on March 15, 2020, and will continue until the position is filled. Applications submitted by the deadline are assured full consideration.

Amherst College is an equal opportunity employer and encourages women, persons of color, and persons with disabilities to apply. The college is committed to enriching its educational experience and its culture through the diversity of its faculty, administration, and staff. For questions, contact the department chair, Professor Scott Kaplan atsfkaplan@amherst.edu.

Binghamton University - State University of New York (SUNY)

SUNY Empire Innovation Professor (Full Professor) - Thomas J. Watson School of Engineering and Applied Science

The Thomas J. Watson School of Engineering and Applied Science at Binghamton University (SUNY) invites applications for a senior faculty position at the full professor level, with a possible start date of Fall 2020. We invite prominent leaders in the interdisciplinary fields of *artificial intelligence (AI)*, *machine learning (ML)*, and *data science* that are integrated into the *healthcare*

applications. This position was made possible by the SUNY Empire Innovation Program, and will be the *first* of the three cluster hires in "Artificial Intelligence and Machine Learning for Healthcare Systems" over the next two years. All three faculty will have the title, "SUNY Empire Innovation Professor."

The successful candidate will be expected to present a clear vision for leading the University's existing research and industrial collaborations, which encompass computer vision and imaging, cybersecurity, nursing, biomedical and pharmaceutical sciences, data science, computer science, systems science, statistical learning, network science, mathematical programming, informatics and real-time system control, and health systems engineering. This candidate will also lead the subsequent search for two senior faculty positions (at the associate professor level) during the 2020-2021 academic year. These hires will have a direct role in the growth of the University's education programs related to artificial intelligence. The State University of New York and Binghamton University are equal opportunity employers. All qualified applicants are encouraged to apply at: <https://binghamton.interviewexchange.com/jobofferdetails.jsp?JOBID=120015>.

Clemson University

Lecturer - School of Computing

The School of Computing at Clemson University is enjoying record popularity with our undergraduate majors, and

Professional Opportunities

our teaching faculty have multiple ways in which to serve those students and work in a team environment. We invite applicants for multiple Lecturer positions beginning August 2020 or January of 2021. Responsibilities will include teaching (primarily for undergraduate classes), student advising, curriculum development, and other typical faculty responsibilities. Teaching assignments will be determined based on school needs and candidate interests. Lecturers are eligible for promotion to the ranks of Senior Lecturer and Principal Lecturer. Candidates holding the Ph.D. in Computer Science or a related field are preferred.

More information and application procedures may be found at <https://www.clemson.edu/cecas/departments/computing/connect/lecturer2020.html>

George Mason University

Chair and Professor, Department of Information Sciences and Technology

The George Mason University Department of Information Sciences and Technology (IST), within the Volgenau School of Engineering, invites applications for the position of Department Chair.

George Mason University has a strong institutional commitment to the achievement of excellence and diversity among its faculty and staff, and strongly encourages candidates to apply who will enrich Mason's academic and culturally inclusive environment.

The IST Department has 27 full-time faculty members with research strengths in cybersecurity, networks, data mining and machine learning, natural language processing, human-centered computing, and computing and engineering education. The department also utilizes the expertise of about 90 adjunct professors in teaching undergraduate and graduate classes. IST has the largest and fastest-growing undergraduate major in the university, the BS in Information Technology (ABET-accredited), serving more than 1700 students. Also available fully online, the BS program consistently ranks among the top 20 online programs in the US. Additionally, according to the Computer Training Schools website Mason is ranked as the number 1 Computer Science and IT University in Virginia.

The department has about 200 graduate students in the MS in Applied Information Technology (AIT) program, ranking consistently in the top 25 Online Master's in Information Technology programs in the country according to the U.S. News and World Report. In addition to BS and MS programs, the department also participates in an interdisciplinary MS program in Data Analytics Engineering and a PhD program in Information Technology (concentration in IST) offered by the Volgenau School of Engineering (VSE). The IST Department has been growing at a healthy rate through faculty hiring, with particular emphasis on tenured/tenure-track positions. Research expenditures of the department exceeded \$4.9 Million in 2019. Funding sources include NSF, DOD, DARPA, NIH, and DHHS. Faculty awardees include NSF CAREER and NSF CRII recipients.

In conjunction with Amazon's decision to establish a second headquarter in Northern Virginia, the Commonwealth of Virginia announced a multi-year plan to invest in the growth of degree programs in computing, and George Mason University has committed to accelerate its plans to grow programs in computing and high-tech fields. Among the exciting initiatives being undertaken by the university are the launch of the Institute for Digital InnovAtion, a university think tank and incubator to serve the digital economy, and the expansion of its Arlington Campus with a planned 400,000 square-foot Digital InnovAtion Building. These initiatives reflect hundreds of millions of dollars in new investment by Mason that will rapidly elevate Mason's already leading national position in computing and related areas. IST is a strong contributor in these initiatives.

For more information on the department, please visit our website: <http://ist.gmu.edu/>.

Responsibilities:

Reporting to the Dean of the School, the Department Chair is the chief academic and administrative leader for the department and serves as a key member of the School's leadership team. The Chair will provide vision and leadership to advance the department, positioning the department as a leader in innovation and education in information sciences and information technology. S/he will guide and lead a strong scholarship and research agenda, promote excellence in undergraduate and graduate education, including the development of collaborative

Professional Opportunities

academic programs, and grow the proportion of women and minorities in the educational programs.

Required Qualifications:

The successful candidate will have a PhD in Computer Science, Information Science/Technology or a related field and qualify to be a tenured Full Professor in the IST Department. Competitive candidates will have an outstanding record in research with a strong record of funding, along with a genuine understanding of the teaching mission and the importance of providing undergraduate and graduate students with the highest quality educational experience. A demonstrated commitment to the effective mentoring of junior faculty is essential. The Department Chair must have the leadership skills and vision to advance the department to the next level and possess sound personal and academic integrity, strong oral and written communication skills, and a focus on openness and transparency.

Mason Engineering: The Future of Engineering is Here

The Volgenau School of Engineering at George Mason University is a fast-growing force for innovation in research and education, with approximately 250 full-time faculty. The school boasts more than 8,170 students in 37 undergraduate, master's, and doctoral degree programs, including several first-in-the-nation offerings. Volgenau School researchers earned more than \$90 million in awards over the last 12 months. Located in the heart of Northern Virginia's technology corridor, Mason Engineering stands out

for its excellence in emerging areas including big data, cybersecurity, healthcare technology, robotics and autonomous systems, signals and communications, and sustainable infrastructure.

George Mason University

George Mason University is the largest public research university in Virginia, classified at the R1 highest research activity level, with an enrollment of over 38,000 students studying in over 200-degree programs. Mason is an innovative, entrepreneurial institution with national distinction in a range of academic fields. Mason is located in the city of Fairfax in Northern Virginia at the doorstep of the Washington, D.C., metropolitan area, with unmatched geographical access to a number of federal agencies and national laboratories. Northern Virginia is also home to one of the largest concentrations of high-tech firms in the nation, providing excellent opportunities for interaction with industry. Fairfax is consistently rated as being among the best places to live in the country and has an outstanding local public school system.

Special Instructions to Applicants:

For full consideration, applicants must apply for position number F403AZ at <https://jobs.gmu.edu/>; complete and submit the online application; and upload a curriculum vitae, vision statement (to attach as 'Other Doc'), a statement on what diversity and inclusion means to you (to attach as 'Other Doc'), and the names of three professional references. All candidate information will be held in

strict confidence. Preference will be given to applications received by March 16, 2020, and review will continue until the position is filled.

George Mason University is an equal opportunity/affirmative action employer, committed to promoting inclusion and equity in its community. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability or veteran status, or any characteristic protected by law.

Georgia Institute of Technology

Postdoctoral Fellow - Cybersecurity

The School of Electrical and Computer Engineering at the Georgia Institute of Technology has an immediate new opening for a full-time Postdoctoral Researcher in the area of Cybersecurity. The position will begin in the summer or fall semester of 2020.

The successful applicant will work with Prof. Brendan Saltaformaggio and the Cyber Forensics Innovation (CyFI) Laboratory at Georgia Institute of Technology in Atlanta, GA. Applicants should be motivated to both join existing projects as well as propose new opportunities and directions.

More information about the CyFI Lab's research can be found here: <https://cyfi.ece.gatech.edu/>

Professional Opportunities

Georgia Tech prides itself on its technology resources, collaborations, high-quality student body, and its commitment to diversity, equity, and inclusion. Georgia Tech is an equal education/employment opportunity dedicated to building a diverse community. We strongly encourage applications from women, underrepresented minorities, individuals with disabilities, and veterans. Georgia Tech has policies to promote a healthy work-life balance.

Minimum Qualifications:

- Background in research focusing on cybersecurity, cyber forensics, malware analysis, program analysis, mobile security, IoT security, or a similar domain.
- Excellent written communication skills demonstrated by prior publications.
- Creative experience in asking and answering important research questions by leading on prior research activities.
- Completed or near completion of a PhD in computer science, computer engineering, or related area.

Preferred Qualifications:

1. Experience in cyber attack forensics, web application security, and automated vulnerability/malware analysis.
2. Breadth of background knowledge of IoT devices, mobile apps, cloud backends, and network security using active and passive techniques.

Apply here: <https://academicjobsonline.org/ajol/jobs/I6139>

Hobart and William Smith Colleges

Visiting Assistant Professor of Computer Science

The Department of Mathematics and Computer Science at Hobart and William Smith Colleges invites applications for a visiting faculty position in computer science to begin in the Fall of 2020. This is a one-year, full-time temporary position. Duties include teaching five undergraduate computer science courses over two semesters. A strong commitment to teaching is required. Candidates should be able to use Java as the language of instruction. Experience with and/or interest in working in a multicultural environment and encouraging excellence from students with diverse backgrounds and experiences is highly desirable.

Candidates with a Ph.D. in computer science or related field by August 2020 are preferred but those who are A.B.D. or hold an M.S. in computer science will also be considered. Applicants must be authorized for employment in the U.S. on a full-time basis. Employment-based visa sponsorship is not available.

A full position announcement with application instructions is available at <https://academicjobsonline.org/ajol/jobs/I6153>. Evaluation of applications begins March 22, 2020. Contact: bridgeman@hws.edu

The Hong Kong University of Science and Technology

Founding Faculty in the Information Hub

Job ID:

5213 for Artificial Intelligence (AI)

5214 for Digital Media and Art (DMA)

5215 for Data Science and Analytics (DSA)

The Hong Kong University of Science and Technology (HKUST) invites applications for founding faculty positions at all levels at Professor, Associate Professor and Assistant Professor rank in **Artificial Intelligence (AI), Digital Media and Art (DMA) and Data Science and Analytics (DSA)** for its new campus in Guangzhou (GZ).

For AI, candidates should have a demonstrated ability to pursue high-impact research in AI and its applications. We specifically look for candidates interested in applied AI research who are able to collaborate closely with domain experts in the target application areas to develop transformative technologies using AI. The initial focus areas include, but are not limited to, AI in design, AI in finance, AI in manufacturing, AI in medicine, AI in security and privacy, and AI in smart living. We welcome senior candidates to apply, especially those who can help with the strategic development of the AI trust area for the new Guangzhou campus.

For DMA, the thrust area focuses on art creation and visual communication with new technology, with an emphasis on art with augmented reality (AR) and virtual reality (VR), AI-generated art, information art and design, and data visualization.

Professional Opportunities

The Hub promotes the interplay of art and technology and exploits the most advanced technology for art creation and visual communication with a social impact. Candidates should be able to create a multidisciplinary curriculum and pursue high impact research in science, technology and engineering-oriented academic environment. Candidates with the art background shall be comprising MFA plus an active Digital Arts exhibition history with a sustained creative research practice in areas of the above-mentioned specialization. Priority will be given to digital artists who can teach a range of skills, including digital and innovative approaches; showing an explicitly experiential, experimental and expansive outlook on digital arts making; commanding a broad understanding and active creation beyond either in the animation field and/or video, game or digital design. Candidates with engineering background should have demonstrated ability to pursue high impact research in virtual/augmented/mixed reality, computer graphics, data visualization, human-computer interaction, etc.

For DSA, the thrust area focuses on unifying statistics, machine learning, optimization, and their related techniques. By analyzing and modeling data, the Hub aims to transform analytics into industrial and business insights for effective decision making. The initial focus areas include, but not limit to, data-driven AI & machine learning, statistical learning and modeling, industrial and business analytics (operations-related data analytics, business intelligence and strategy, etc.), and sector-specific data analytics (healthcare, finance, insurance, marketing, manufacturing,

transportation, etc.). Candidates should have demonstrated the ability to pursue high impact research in the areas of data science and analytics.

Candidates for all ranks must have a PhD degree in related disciplines.

About HKUST Guangzhou Campus [\[https://gz.ust.hk/\]](https://gz.ust.hk/)

HKUST(GZ) offers a unique educational environment with four transdisciplinary hubs and 16 thrust areas. HKUST(GZ) offers superb research facilities, attracting top international faculty and students to conduct curiosity-driven and goal-oriented research to address the world's pressing scientific and technological challenges. English is the medium of instruction and administration at HKUST (GZ).

HKUST(GZ) is situated in Nansha District, Guangzhou, which is right in the center of the Greater Bay Area, one of the most vibrant and dynamic regions in the world, neighboring Shenzhen, Hong Kong, and Macao. It is about 30 minutes away from Hong Kong by high-speed train. The new campus is under construction and is planned to open in 2022. Successful candidates may start working on the Clear Water Bay campus in Hong Kong before the new campus is completed.

About the Information Hub

The HKUST(GZ) Information Hub focuses on addressing global challenges arising from human interactions with information and technology in an era of digital transformation. The Hub is mainly comprised of four thrust areas: Artificial

Intelligence, Data Science and Analytics, Future Communication Networks, and Digital Media and Arts. We have also established an Internet of Things (IoT) division focused on technology transfer and industrial projects. In each of these areas, we are committed to providing world-class education and conducting cutting-edge research with practical applications, with the purpose of not only advancing regional development but also making a global impact.

Remuneration and Conditions of Service

Salary is highly competitive of international standards and will be commensurate with qualifications and experience. Generous research funds, ample laboratory space and excellent research equipment and support will be provided.

All posts are tenure-track Mainland China appointments to be offered by the HKUST Mainland entity in accordance with the local employment laws and regulations. Appointment to Professor rank and some Associate Professor rank will be made on a substantive basis while initial appointment to other tenure-track faculty ranks will be made on a fixed-term contract of up to three years commencing the earliest in July/August 2020. Re-appointment thereafter will be subject to performance, mutual agreement and funding availability.

Application Procedure

Applications with specification of the relevant Job ID should be sent to <gzrecruitINF@ust.hk> together with (i) full CV; (ii) a statement of research, teaching, and service; (iii) up to five

Professional Opportunities

most representative publications in PDF formats; (iv) record of teaching performance (if any); and (v) names and contact information of three referees. Review of applications will continue until the positions are filled.

Indiana University

Senior Project Coordinator/ Research Scientist

The Observatory on Social Media at Indiana University has an open position for a research scientist to join the management team as Senior Project Coordinator (SPC). Our mission is to study the media and technology networks that drive the online diffusion of dis/mis/information.

The SPC will lead research in computational social science and data journalism; coordinate outreach and collaborations with academic, technology, and media partners; supervise students, and help raise research funds.

A strong research record and coding, analytical, communication, and writing skills are required. The appointment is to start as soon as possible. The salary is competitive and benefits are generous. For more information or to apply,

visit: cnets.indiana.edu/blog/2020/01/10/awesome-research-scientist-wanted/

Johns Hopkins University

Postdoctoral Researcher

The Center for Language and Speech Processing (CLSP) at the Johns

Hopkins University seeks applicants for postdoctoral fellowship positions in speech and language processing, including the areas of natural language processing, machine learning and health informatics. Applicants must have a Ph.D. in a relevant discipline and a strong research record.

Possible research topics include:

- Semantic Parsing / Event Recognition
- Social Media and Mental Health
- Analysis of Clinical Medical Text
- Broadly Multilingual Learning of Morphology and Low-Resource Machine Translation

Johns Hopkins University is a private university located in Baltimore, Maryland with easy access to a number of affordable and vibrant neighborhoods.

CLSP is one of the world's largest academic centers focused on speech and language with a dozen faculty members and over 80 graduate students. It has a history of placing students in top academic and industry positions.

Applicants are not required to be US citizens or permanent residents.

Details and application information:

<https://www.clsp.jhu.edu/employment-opportunities/>

<https://apply.interfolio.com/71300>

Johns Hopkins University

Research Scientist

The Human Language Technology Center of Excellence (HLTCOE) at Johns Hopkins University seeks to hire outstanding senior, junior, and post-doc researchers in all areas of speech and language processing. Located adjacent to Johns Hopkins' beautiful Homewood campus in Baltimore, Maryland, the HLTCOE conducts long-term and applied research on fundamental application-driven challenges. Its staff scientists publish widely in premier venues, and, through close collaboration with members of the Center for Language and Speech Processing (CLSP), make Johns Hopkins one of the world's largest and growing academic research groups in the field.

Description:

A good candidate will have a strong general background and publishing experience in one or more of the following tasks:

- Characterizing Communicants
- Information Extraction
- Information Retrieval
- Machine Learning
- Machine Translation
- Multi-Lingual Algorithms
- Parsing and Tagging
- Speaker and Language Identification
- Speech Recognition
- Spoken Language Applications

Professional Opportunities

Applicants should hold a Ph.D. or a master's degree (with commensurate experience) in computer science, electrical engineering, linguistics, cognitive science, or a closely related field.

Why HLTCOE?

Research scientist positions at the HLTCOE bring together many of the best aspects of academic and industrial research. Staff scientists are charged with setting a research agenda in line with the Center's goals, working with other members of the HLTCOE research team, and publishing results. If they wish, researchers also have the opportunity to apply for external funding, to work with and advise students at CLSP, and to teach at Johns Hopkins.

Centrally located on the east coast, Baltimore is affectionately known as Charm City because of its friendly people, thriving arts scene, and multitude of restaurants and pubs. The center of the city is the Inner Harbor, home to features such as the National Aquarium, historic Federal Hill, and two professional sports teams. It is famous for its crab cakes, and rich in the arts, from a variety of museums to children's centers and a symphony orchestra. Just outside the city are abundant natural settings great for hiking, biking, and other outdoor adventures. Baltimore is part of the east coast corridor, just a short train, bus, or car ride away from Washington D.C., Philadelphia, and New York. Best of all, Baltimore is affordable: many Hopkins employees own homes in adjacent neighborhoods, close enough to

the University to walk or bike to work or to take public transportation.

In addition to excellent medical, dental and vision insurance, JHU has a variety of other generous benefits* including:

- 50% tuition grant for employee's children enrolled in any full-time, accredited, undergraduate, degree-grant institution;
- Up to \$17,000 towards the closing cost of new home in Baltimore City and;
- University-made contributions of 12% of your base salary into your JHU 403(b) retirement plan.

*For more detailed information regarding benefits, please visit:

hr.jhu.edu/benefits-worklife/

Applying

To apply, please visit <https://apply.interfolio.com/39944>

U.S. citizenship is required.

Applications will be considered in batches on a rolling basis until positions are filled.

Kent State University

Faculty Tenure Track-9 Mo

Computer Science

[Job #987954]

Stark Campus - North Canton, OH

Opportunity Kent State University at Stark invites applications for a full-time, nine month Tenure Track Assistant Professor in Computer Science starting Fall 2020.

Qualifications: A Ph.D. in Computer Science or a closely related field with evidence of scholarship and teaching excellence required. ABD's will be considered if degree requirements will be completed by August 15, 2020.

For a complete description of this position and to apply online, visit our jobsite at <https://jobs.kent.edu>

Equal Opportunity / Affirmative Action Employer / Disabled / Veterans

Milwaukee School of Engineering

Computer Science and Software Engineering Faculty

The Electrical Engineering and Computer Science (EECS) department at the Milwaukee School of Engineering (MSOE) seeks applicants to fill multiple Computer Science (CS) and Software Engineering (SE) faculty positions at all ranks. MSOE expects, rewards, and supports a strong primary commitment to excellence in teaching. Faculty enjoy small class sizes and hands-on labs as well as continuous improvement and sustained professional development. Among the department's strengths are strong partnerships with numerous businesses and academic institutes, which guide applied projects, undergraduate research, and curriculum development.

To view the full advertisement, receive application instructions, and apply, please visit <http://www.milwaukeejobs.com/jj/39659781>

Professional Opportunities

It is the policy of MSOE to provide equal employment opportunity to all individuals regardless of their race, ethnicity, color, creed, religion, sex, age, national origin, physical or mental disability, military and veteran status, sexual orientation, gender identity, genetic characteristics, marital status or any other characteristic protected by local, state or federal law. This policy applies to all jobs at the University and to all the terms, benefits, and conditions of employment/enrollment.

Mount Holyoke College

Lecturer in Computer Science

The Department of Computer Science at Mount Holyoke College invites applications for a Lecturer, to begin fall 2020. The teaching load for this position is 5 courses per year. All candidates should have a Masters or Ph.D. in hand by the start of the contract period.

The full job ad is available at <https://jobs.mtholyoke.edu/>, and applications should be submitted through that site as well.

We will begin reviewing applications on March 23, 2020, and will continue until the position is filled.

Please contact Valerie Barr, vbarr@mtholyoke.edu with any questions.

North Carolina State University

Director of Cybersecurity Education

The Department of Computer Science at North Carolina State University (NC

State) invites applications for a Director of Cybersecurity Education starting July 2020. This is a non-tenure-track position. Candidates must have a minimum of an MS degree, Ph.D. preferred, in Computer Science or related field along with extensive experience and contacts in industry/government. Candidates should demonstrate a very good reputation and commitments to cybersecurity education and industrial relationships.

The Director of Cybersecurity Education will oversee the undergraduate cybersecurity education initiatives in the department. These initiatives include a Cybersecurity Concentration for the Bachelor of Science degree in Computer Science as well as the formation of a Community of Practice in cybersecurity. The Director will be expected to highly engage with industry to identify, recruit, and review instructors for short courses, as well as mentors for student projects, and placement for internships and full-time positions. The Director will also be expected to be highly engaged with students, building on existing student group initiatives (e.g., Hackpack – <https://hackpack.club>) and developing new opportunities for students. The Director is expected to actively pursue both industry and government grants (e.g., Cybercorps Scholarships for Service, NSF SaTC EDU) to ensure sustained support for the position and the large educational initiative. The position will exist within the Secure Computing Institute at NC State (<https://sci.ncsu.edu>) and report to the institute co-directors.

The Department of Computer Science at NC State is one of the oldest and largest CS departments in the country. It is part of the university's College of Engineering. NC State is located in Raleigh, the capital of North Carolina, which forms one vertex of the world-famous Research Triangle, including Research Triangle Park (RTP). RTP has one of the most diverse industrial bases in the world and is a center of excellence for technology and science. The Research Triangle area is routinely recognized in national surveys as one of the best places to live in the U.S. We enjoy outstanding public schools, affordable housing, and great weather, all in the proximity of both mountains and the seashore.

Applications will be reviewed as they are received. The positions will remain open until suitable candidates are identified. Applicants are encouraged to apply by March 15, 2020. Salary will be commensurate with qualifications. Applicants should submit the following online at <http://jobs.ncsu.edu> (reference position number 107911, or use the quick link: <http://jobs.ncsu.edu/postings/I27722>): cover letter, curriculum vitae, statement of teaching and education philosophy, a statement of service, and names and complete contact information of three references, including email addresses and phone numbers. Candidates can obtain information about the department and its research programs, as well as more detail about the position advertised here at <http://www.csc.ncsu.edu/>. Inquiries may be sent via email to: group-csc-security-edu-search@ncsu.edu.

Professional Opportunities

NC State University is an equal opportunity and affirmative action employer. All qualified applicants will receive consideration for employment without regard to race, color, national origin, religion, sex, gender identity, age, sexual orientation, genetic information, status as an individual with a disability, or status as a protected veteran.

Individuals with disabilities requiring disability-related accommodations in the application and interview process, please call 919-515-3148.

Final candidates are subject to criminal & sex offender background checks. Some vacancies also require credit or motor vehicle checks. If the highest degree is from an institution outside of the U.S., final candidates are required to have their degree verified at www.wes.org. Degree must be obtained prior to start date.

NC State University participates in E-Verify. Federal law requires all employers to verify the identity and employment eligibility of all persons hired to work in the United States.

Northeastern University

*Director of Computer Science and
Professor of Practice*

The Khoury College of Computer Sciences at Northeastern University invites applications for positions at the rank of Professor of the Practice and Director of Computer Science in the master's Programs at Northeastern's new campus in Toronto, Ontario. The Director will

provide the leadership for overseeing the growth of computer science programs offered in Toronto, including the Align Master's in Computer Science, and the direct entry Master's in Computer Science.

Align's mission is to close America's tech diversity gap. To do so, we are reinventing Computer Science post-graduate education by scaling an innovative experiential master's in computer science for non-computer science majors. Scaling Align is a priority initiative of Northeastern University's Khoury College of Computer Sciences.

The Align MS in CS is an on-ramp designed to bring a diversity of race, gender and thought into America's tech workforce. Enrollment goals are 50% female and 25% underrepresented minorities in CS. It differs from other MS in CS programs in several key ways: it is intended specifically for students who did not earn an undergraduate degree in CS; it begins with two semesters of Align academic bridge courses ("the bridge") to prepare students for Master's level work; It emphasizes work experience, leveraging Northeastern's famous co-op program and a network of 400+ corporate partners in tech; and it is taught at night and year-round so students can finish in 2-2.5 years.

Qualifications

Candidates will be considered from all areas in Computer and Information Science. A Ph.D. in Computer Science, Information Science or a related field is required and demonstrated ability or potential for teaching excellence is required. The Director will have a distinguished career

in the computing field that would qualify for the title of Professor of the Practice in Computer Science.

Full ad: <https://careers.hrm.northeastern.edu/en-us/job/502815/professor-of-practice-and-director-of-computer-science-toronto>

Princeton University

*Senior Research Specialist I
Bendheim Center for Finance*

Start Date: TBD

Position Summary: The successful candidate will work under the general direction of *Professors Markus Brunnermeier and Jonathan Payne* and will assist a group of center faculty members in various aspects of their research. The research projects involve questions relating to financial, monetary and macroeconomics. The position will include a variety of tasks that provide good preparation for graduate school, such as conducting numerical analysis, solving models, managing data sets, statistical analysis, economic analysis, and editing research papers. In addition to working closely with faculty, senior research specialists participate in the vibrant academic life of Princeton University, including auditing classes, attending seminars, and interacting with undergraduate and graduate students and with post-doc fellows.

Princeton University's Bendheim Center for Finance (BCF) is at the forefront of research and education in Money and

Finance, with the mission to serve our global society. As an interdisciplinary center, it draws its faculty from various departments across Princeton's campus. New technology has profound implications on the role of money and the international financial architecture. BCF aspires to be part of this process by developing and applying novel research tools and methods. BCF's educational programs equip students with cutting-edge insights and tools. Finally, through its public and policy outreach, BCF aims to bring an important contribution to the broader public and policy debate on macroeconomics, money, and finance.

The position is thus *ideal for exceptional graduating seniors with a strong interest in pursuing a Ph.D. in economics after acquiring one or two years of research experience.*

Following the completion of this position, most research specialist have gone on to top Ph.D. programs in economics and finance.

Essential Qualifications:

Applicants should have a minimum BA/BS degree in Economics, Math, Engineering or Computer Science and excellent analytical, numerical, empirical, research and writing skills. Candidates with research experience are strongly preferred, especially those with experience in numerical modeling, statistics, and econometrics. Experience in numerical software packages and languages like Matlab, Python and Julia. Knowledge

in statistics and econometrics, including knowledge of statistical programming using STATA. Knowledge in stochastic calculus, differential equations, standard internet tools, HTML, and social science data sources and publishing software is desirable. Upon request, candidates should be prepared to submit transcripts and writing samples.

Candidates should provide a CV and an unofficial transcript.

The final candidate will be required to successfully pass a background check.

To Apply: <https://bcf.princeton.edu/about/job-openings/>

This is a one year position renewable for one additional year.

Rutgers University

Assistant Teaching Professor (NTT) - Computer Science

Rutgers University, Camden seeks to fill a non-tenure track full-time Assistant Teaching Professor position in the Department of Computer Science (<http://cs.camden.rutgers.edu/>), beginning September 2020.

The position includes university benefits and is for a 2-year initial appointment with the possibility of repeated renewals, each for at least 2 years. The successful candidate will be able to teach broadly in all major areas of computer science. A strong preference will be given to candidates



Instructional Faculty

5082BR

**Golisano College of Computing & Info Sciences
GCCIS - Global Cybersecurity Institute**

Faculty Type (Tenure Status): Tenured

Faculty Discipline: Computer Science, Computer Security and Information Assurance, Human Computer Interaction, Information Sciences & Technologies, Information Security and Forensics, Information Technology, Interactive Games & Media, Medical Informatics, Networking and Cyber Security, Networking and Systems Administration, Networking, Security and Systems Administration, New Media Design, Software Engineering

Faculty Rank: Associate Professor, Professor

Employment Category: Fulltime

Anticipated Start Date: 12-Aug-2020

Department/College Description

Founded in 1829, Rochester Institute of Technology is a diverse and collaborative community of engaged, socially conscious, and intellectually curious minds. Through creativity and innovation, and an intentional blending of technology, the arts and design, we provide exceptional individuals with a wide range of academic opportunities, including a leading research program and an internationally recognized education for deaf and hard-of-hearing students. Beyond our main campus in Rochester, New York, RIT has international campuses in China, Croatia, Dubai, and Kosovo. And with nearly 19,000 students and more than 135,000 graduates from all 50 states and over 100 nations, RIT is driving progress in industries and communities around the world.

Detailed Job Description

The Global Cybersecurity Institute (GCI) at RIT invites applications for an Endowed full-time tenured professor or associate professor position. We encourage candidates with significant track records in external funding and highly recognized research outputs with a focus in, but not limited to: usable security, applied cryptography, games and cybersecurity, software security, network and system security, and the intersection of cybersecurity and artificial intelligence.

RIT is making a major investment in cybersecurity, spurred by a recent gift of \$20 million by alumnus Austin McChord and a \$5 million investment by New York State. We are building a new 50,000-sq. ft. building wing dedicated to the new Global Cybersecurity Institute (GCI) that will open in the fall of 2020, helping to further establish RIT as a leader in this field. Currently, we have 27 faculty members from across RIT working to address the growing challenges in cybersecurity with an interdisciplinary approach. Please visit <https://cybersecurity.rit.edu> for more information about cybersecurity at RIT.

The successful candidate will be granted an endowed position with dedicated research funding and additional salary commensurate with the role they will play in leading major research initiatives in cybersecurity. The candidate may be hired into any department in RIT and will be expected to collaborate across the university to advance research and education in cybersecurity and be a cornerstone in the growth of GCI.

We are seeking an individual who has the ability and interest in contributing to RIT's core values, honor code, and diversity.

Required Minimum Qualifications

- PhD in computing or a related discipline by date of appointment.
- At least six years of experience as a tenure-track or tenured faculty member at a research-oriented university or equivalent experience as a researcher in industry.
- Recent scholarly dissemination record that demonstrates an exceptional ability to conduct and publish high-impact peer-reviewed research in cybersecurity, from the perspective of the candidate's discipline of expertise. Scholarly dissemination includes presentations in academic conferences, publications in peer-reviewed journals, or development of peer-reviewed software products or data sets.
- Outstanding record of establishing and running an independent, externally funded research program.
- Ability to teach at the undergraduate and graduate levels, and a record of successful mentorship of junior researchers.
- Record of leadership and collaboration in research and an interest in working in a collaborative, collegial environment.
- Demonstrated commitment to contribute in meaningful ways to cultural diversity, pluralism, and individual differences.

Required Minimum Education Level

PhD

Required Application Documents

Cover Letter, Curriculum Vitae or Resume, Research Statement, Statement of Teaching Philosophy

How To Apply

Apply online at will <http://careers.rit.edu/faculty> Search:5082BR. Please submit the following: your online application; cover letter addressing the required qualifications for this position; curriculum vitae, and upload the following attachments:

- Research statement
- Statement of Teaching Philosophy

Review of applications will begin immediately and continue until a suitable candidate is found.

The direct link to this posting can be found here: <https://appptrk.com/1836888>

Additional Details

The hiring process for this position may require a criminal background check and/or motor vehicle records check. Any verbal or written offer made is contingent on satisfactory results, as determined by Human Resources. RIT does not discriminate. RIT promotes and values diversity, pluralism and inclusion in the work place. RIT provides equal opportunity to all qualified individuals and does not discriminate on the basis of race, color, creed, age, marital status, sex, gender, religion, sexual orientation, gender identity, gender expression, national origin, veteran status or disability in its hiring, admissions, educational programs and activities. RIT provides reasonable accommodations to applicants with disabilities under the Rehabilitation Act, the Americans with Disabilities Act, the New York Human Rights Law, or similar applicable law. If you need reasonable accommodations for any part of the application and hiring process, and you wish to discuss potential accommodations related to your application for employment at RIT, please contact the Human Resources office at 585-475-2424 or email your request to careers@rit.edu.

RIT does not discriminate. RIT is an equal opportunity employer that promotes and values diversity, pluralism, and inclusion. For more information or inquiries, please visit [RIT/TitleIX](http://TitleIX.rit.edu) or the U.S. Department of Education at ED.Gov.

able to offer courses in C and systems programming, computer organization, operating systems, distributed and cloud computing, computer networks, and software engineering. In addition candidates with an interest in teaching topics in applied computer security are strongly encouraged to apply. The teaching load for non-tenure track positions is four courses each Fall and Spring semester, though one or more courses per semester may be substituted by advising and administrative responsibilities.

Prospective candidates must submit an application that includes cover letter, curriculum vitae, teaching statement, and three reference letters to the Computer Science Search Committee. All material should be submitted electronically at <http://jobs.rutgers.edu/postings/111960>. Inquiries may be directed Suneeta Ramaswami, Search Committee Chair at suneeta.ramaswami@rutgers.edu. All applications received by March 15, 2020, will receive maximum consideration, but we will continue to accept applications until the position is filled.

Rutgers University

Non-Tenure Track Faculty Position

The Department of Computer Science at Rutgers University invites applications for a non-tenure track position. This position will primarily involve teaching at the undergraduate level, although depending on experience, can also include teaching in our MS programs and developing and



Stony Brook University



Faculty Position (All Levels) Quantum Information Science and Engineering

The Computer Science (CS) Department and the Electrical and Computer Engineering (ECE) Department at Stony Brook University invite applications for a tenure-track faculty position in Quantum Information Science and Engineering at the Assistant, Associate, and Full Professor levels. This position is seeded by a SUNY Empire Innovation Program grant. Applications will be processed on an ongoing basis until the position is filled.

The senior-level positions come with the title of Empire Innovation Professor, enhanced salary, and research support. Exceptionally qualified senior and junior candidates in all areas of Quantum Information Science and Engineering, including quantum algorithms, communication, complexity, and devices, are invited to apply. The position will be solely or jointly in the CS or ECE departments based on the area of the candidate. Applicants should hold a PhD in Computer Science, Electrical Engineering, Computer Engineering, or a closely related discipline and must demonstrate outstanding research accomplishments and potential.

The Department of Computer Science currently has over 50 faculty members and is expected to recruit additional members in the next several years. The Department offers undergraduate programs in Computer Science and Information Systems; and MS and PhD programs in Computer Science. Detailed information on the Department can be found on the Department website: <http://www.cs.stonybrook.edu>. In 2015 the department moved to a new state-of-the-art 70,000 sq ft building.

The Department of Electrical and Computer Engineering currently has 28 full-time faculty members. Detailed information on the Department can be found on the Department website: <https://www.stonybrook.edu/commcms/electrical/>. The department offers undergraduate, MS, and PhD programs in Electrical Engineering and Computer Engineering. The department also offers an ABET-accredited BS online program in Electrical Engineering.

Quantum Computing at SBU: The Department of Physics and Astronomy, and its affiliated C. N. Yang Institute of Theoretical Physics, have significant strength in experimental and theoretical aspects of Quantum Computing, including Quantum Information Systems, Quantum Communication, Quantum Materials, and Quantum Simulations. Physics faculty are leading an effort to create, with the participation of several CS faculty, a SUNY Center of Quantum Information Science at Long Island <https://www.stonybrook.edu/cqis/>. The University is co-manager of nearby Brookhaven National Laboratory (BNL, <https://www.bnl.gov/>), a Department of Energy laboratory. BNL is the home of Northeast Quantum Systems Center (<https://www.bnl.gov/NEQsys/>), of which the University is a member.

The CS and ECE departments have access to a significant laboratory space in the Center of Excellence in Wireless and Information Technology (CEWIT). The departments also have extensive collaborations with the Institute of Advanced Computational Science (IACS, <https://iacs.stonybrook.edu/>).

Stony Brook University is home to many highly-ranked graduate research programs. The University is located 50 miles from New York City on Long Island's scenic North Shore. The University is a member of the prestigious Association of American Universities (AAU).

Application Instructions

Applicants need to electronically submit a curriculum vitae, a cover letter that addresses how you meet the required and preferred qualifications for the position, Statement of teaching and research, and three letters of recommendation or evaluation.

Please apply here with your required documents: <https://apptrkr.com/1834973>.

Stony Brook University is committed to excellence in diversity and the creation of an inclusive learning, and working environment. All qualified applicants will receive consideration for employment without regard to race, color, national origin, religion, sex, pregnancy, familial status, sexual orientation, gender identity or expression, age, disability, genetic information, veteran status and all other protected classes under federal or state laws.

managing applied learning opportunities such as internships. We have particular instructional needs in the broad area of

Data Science, including foundations, data management, and analytics.

The appointment will start September 1, 2020, and will be for two years, renewable contingent on satisfactory performance and availability of funds.

A PhD in Computer Science or closely related field is required, although candidates with an MS and substantial industry experience in software systems design and implementation are encouraged to apply and will be considered. At least one year of college-level teaching experience in Computer Science is strongly preferred. To apply for the position, go to: <http://jobs.rutgers.edu/postings/III669> and submit your CV and contact information for three references.

The CS Department is strongly committed to increasing the diversity of our faculty and welcomes applications from women, dual-career couples, historically underrepresented populations and candidates with disabilities. Offer is contingent upon successful completion of all pre-employment screenings. Rutgers is an affirmative action/equal opportunity employer.

St. Cloud State University

*Computer Science and Information
Technology Department*

St. Cloud State University seeks multiple fixed-term Assistant/Associate Professor positions for Fall 2020 in Computer Science/Cybersecurity/Software Engineering, with preferred research emphases in one or more of the following specializations: programming languages, offensive and defensive security principles, software reverse



Stony Brook University



Assistant, Associate, Full Professor

Computer Science, College of Engineering and Applied Sciences

Multiple Tenure-Track/Tenured Positions in Computer Science - Open Rank

Organization/Institution: Stony Brook University

Department: Department of Computer Science

Stony Brook University's Department of Computer Science invites applicants for multiple tenure-track/tenured faculty positions at the Assistant, Associate and Full Professors levels with an expected starting date of Fall 2020. Exceptionally qualified junior and senior candidates in all areas of Computer Science are invited to apply. Candidates in the following areas are particularly encouraged: 1) theory and algorithms, including quantum computing; 2) machine learning, natural language processing, and data science; 3) computational biology and bioinformatics, 4) verification, formal methods, and programming languages.

The department values diversity and seeks candidates who can contribute to a welcoming climate for all students. We strongly encourage qualified women and minority candidates to apply.

Applicants should hold a Ph.D. in Computer Science or a closely related discipline.

The Department of Computer Science currently has over 50 faculty members and is undergoing a period of rapid growth. In 2015 the department moved to a new state-of-the-art 70,000 sq ft building. The department is either home to or has significant collaborations with several interdisciplinary centers on campus, including the Institute for AI-Driven Discovery and Innovation, National Security Institute (NSI), Center for Visual Computing (CVC), Center of Excellence in Wireless and Information Technology (CEWIT) and Institute of Advanced Computational Science (IACS). Detailed information on the Department can be found on the Department website: <http://www.cs.stonybrook.edu>.

Stony Brook University is home to many highly-ranked graduate research programs. The campus is located about 50 miles from New York City on Long Island's scenic North Shore. Stony Brook University is a member of the prestigious Association of American Universities (AAU) and co-manager of nearby Brookhaven National Laboratory (BNL), a Department of Energy multidisciplinary research laboratory.

Applications Instructions

Applicants need to electronically submit a curriculum vitae, a cover letter that addresses how you meet the required and preferred qualifications for the position, Statement of teaching and research, and three letters of recommendation or evaluation. Please apply here with your required documents: <https://apptrkr.com/1849126>

Stony Brook University is committed to excellence in diversity and the creation of an inclusive learning, and working environment. All qualified applicants will receive consideration for employment without regard to race, color, national origin, religion, sex, pregnancy, familial status, sexual orientation, gender identity or expression, age, disability, genetic information, veteran status and all other protected classes under federal or state laws.

engineering, machine intelligence, cyber-physical systems, visualization, platform-based development and computing

ethics. Application Review begins mid-March 2020; position open until filled. Application should include Cover Letter,

Professional Opportunities

Teaching statement, Research statement, Resume/CV, Contact information for three references, and Copies of Transcript(s).

Full ad: <https://stcloudstate.peopleadmin.com/postings/1932>

Texas Tech University

Lecturer Positions for Computational Thinking Course

Whitacre College of Engineering at Texas Tech University invites applications for two Lecturer positions in Data Science and Computational Thinking. The expected starting date is June 1, 2020. Applicants must have a Masters or a Ph.D. degree in Computer Science or a related engineering discipline. Preference will be given to candidates with experience in Data Science and Python, and a potential for excellence in teaching undergraduate engineering courses. Knowledge of computational thinking is a plus. Successful candidates for this full-time position will be expected to develop and teach the newly proposed Computational Thinking course in the common core freshman engineering curriculum in the College of Engineering.

Applicants must apply at Texas Tech University online job application website at <http://www.depts.ttu.edu/hr/workattexastech/> referencing requisition number 20528BR. The application process requires uploading a detailed CV, a statement of teaching interests and philosophy, and the contact information of at least three references. Applications will be accepted until the position is

filled, with those received prior to March 15, 2020, assured full consideration. Candidates must be currently eligible to work in the United States.

As an Equal Opportunity/Affirmative Action employer, Texas Tech University is committed to the goal of building a culturally diverse faculty committed to teaching and working in a multicultural environment. We actively encourage applications from all those who contribute, through their research, teaching and/or service, to the diversity and excellence of the academic community at Texas Tech University. The university welcomes applications from minorities, women, protected veterans, persons with disabilities, and dual-career couples.

University of Maryland Baltimore County

Professor of the Practice and Graduate Program Director for Health Information Technology

The Department of Information Systems (IS) of the University of Maryland Baltimore County (UMBC) invites applications for a 12-month, Full Time, Non-tenure track Professor of the Practice position.

Reporting to the Chair of the Department of Information Systems, this position serves as the Graduate Program Director of UMBC's program leading to a Master of Professional Studies (MPS) degree in Health Information Technology. This program is offered to professional students through a partnership between

the IS Department and UMBC's Division of Professional Studies (DPS). The incumbent is expected to teach at least two courses per semester in the program. In addition, by closely working with the Department committees and faculty, the incumbent will: participate in the curriculum design and instruction; recruit and supervise qualified part-time faculty; collaborate with DPS on administrative tasks such as program marketing, student recruitment and retention activities; pursue business development opportunities with industry; manage UMBC's Health Information Technology Management Advisory Board; and carry out the administrative duties associated with academic program oversight. The incumbent is expected to attend all departmental meetings, faculty gatherings, and social events at UMBC's main campus and help with academic and administrative work at the main campus program when necessary.

Education/Experience: Requires a doctorate degree in any of the following: information systems, computer science, health/medical informatics, public policy, biomedical engineering or other related areas. Applicants are expected to have at least five years of relevant professional experiences and/or teaching experience in the classroom and/or online environment. Extensive experience as a Health IT professional is desired. Experience with industry-oriented graduate programs is preferred.

Salary is commensurate with qualifications and experience.

Professional Opportunities

Please submit a cover letter, complete CV, a brief statement of teaching, a statement of contributions to diversity, and names of three professional or academic references (letters will be required later for shortlisted candidates) via Interfolio at <http://apply.interfolio.com/73951>. Document review and selection of candidates will start immediately. The position will remain open until filled. Emailed applications will not be accepted. Inquiries can be directed to the Search Committee Chair, HIT_gpd_search@umbc.edu.

UMBC is a public research university that is leading the world in inclusive excellence in research and teaching. We are redefining how to teach, and we are one of the most innovative universities in the nation (US News). To continue to support this goal, the Faculty Development Center provides excellent support such as classroom observation, collection and analysis of student feedback as well as regular workshops and pedagogical demonstrations. Our research is bold, cross-disciplinary, and leverages our location near to the hospitals in Baltimore, NIH, NASA, NSF, and the USGS. UMBC's strategic location in the Baltimore-Washington corridor puts us close to many high-tech companies as well. The 2018 Chronicle of Higher Education also named UMBC as one of the best colleges to work for, for the ninth year in a row. The department, college and UMBC are deeply committed to the success of all of our faculty. We have various mentoring programs such as "launch committees" to offer regular and structured mentorship for faculty to develop a thriving and successful

research program and the Eminent Scholar mentoring program to build relationships with leaders in the field beyond UMBC. The campus is close to both energetic urban centers and family-friendly suburbs. Nearby cities such as Columbia and Ellicott City have been routinely ranked as top 10 best places to live in the US.

We especially welcome applications from candidates who are eager to contribute to the diversity mission of the university and the department. UMBC is a national model for diversity and inclusive excellence in STEM. Examples of these are our Meyerhoff Scholar programs (<http://meyerhoff.umbc.edu/>), the Center for Women in Technology (<http://cwit.umbc.edu>), and PROMISE: Maryland's AGEP and LSAMP Bridge to the Doctorate programs. Inclusive excellence is a hallmark of UMBC and a foundational value of our community. UMBC is the nation's #1 producer of African American undergraduates who go on to complete an M.D./Ph.D. and #2 nationally for African American undergraduates who complete a STEM Ph.D. The IS department also has a diverse student body with 23% from under-represented minorities and half of our full-time faculty are female.

UMBC is an Equal Opportunity/Affirmative Action Employer and is a recent recipient of a National Science Foundation ADVANCE award to promote hiring and advancement of women in science and engineering. We welcome applications from women, minorities, veterans, and individuals with disabilities.

University of Maryland

Tenure-track and tenured positions at the Maryland Cybersecurity Center (MC2)

The Maryland Cybersecurity Center (MC2) has openings for multiple tenured and/or tenure-track faculty positions in cybersecurity. There is particular interest in the broader area of systems security but exceptional candidates will be considered in all areas of cybersecurity such as (in alphabetical order) *adversarial machine learning, blockchain and cryptocurrency security, cryptography, data-driven security, human-centered security, network and wireless security, PL-oriented and software security, privacy/censorship/fairness and side-channel analysis, attacks, and defenses*. Successful applicants will have a tenure home either with the Department of Computer Science or the Department of Electrical and Computer Engineering at the University of Maryland and will also have a joint appointment at the University of Maryland Institute for Advanced Computer Studies (UMIACS).

Computer Science and Engineering at the University of Maryland are consistently ranked among the top 15 nationally. In 2019, the Maryland Cybersecurity Center moved into its new state-of-the-art facility, the Brendan Iribe Center for Computer Science and Engineering. Additional information about the Maryland Cybersecurity Center, the Department of Computer Science, the Department of Electrical and Computer Engineering and UMIACS is available at www.cyber.umd.edu/, www.cs.umd.edu, <http://www.ece.umd.edu> and at www.umiacs.umd.edu. To learn more about the Iribe Center, please visit: iribe.umd.edu/.

Professional Opportunities

Interested candidates should apply on-line at <https://ejobs.umd.edu/postings/76588> or go to www.ejobs.umd.edu and search under Faculty for position 105032 in order to receive consideration. Applications are accepted all year until all positions are filled. Applicants are strongly encouraged to have complete versions of their materials – including a cover letter, a curriculum vitae, research and teaching statements, and recommendation letters from at least four references—uploaded by February 10th, 2020. Candidates will be prompted when submitting the application to submit all information for their references. Questions can be directed to the faculty recruitment committee at tdumitra@umd.edu. The Maryland Cybersecurity Center is committed to building a diverse faculty pre-eminent in its mission of research, education, and service to the community, and we especially encourage applications from women and underrepresented minorities. In addition, candidates who have experience engaging with a diverse range of faculty, staff, and students in promoting and fostering inclusivity are encouraged to discuss their perspectives on these subjects in the application materials.

The University of Maryland, College Park, was founded in 1856 and is the flagship institution in the University System of Maryland. Its 1,250-acre College Park campus is minutes away from Washington, D.C., the nexus of the nation's legislative, executive, and judicial centers. This unique proximity to business and technology leaders, federal departments and agencies, and a myriad of research organizations, embassies, think tanks, cultural centers, and non-profit organizations offers unique opportunities for engagement for faculty and students.

The University of Maryland, College Park, an equal opportunity/affirmative action employer, complies with all applicable federal and state laws and regulations regarding nondiscrimination and affirmative action; all qualified applicants will receive consideration for employment. The University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, national origin, physical or mental disability, protected veteran status, age, gender identity or expression, sexual orientation, creed, marital status, political affiliation, personal appearance, or on the basis of rights secured by the First Amendment, in all aspects of employment, educational programs and activities, and admissions.

University of New Haven

Assistant/Associate Professor or Lecturer of Computer Science

The University of New Haven invites applications for an Assistant/Associate Professor or Lecturer of Computer Science with a focus on game development for August 2020. For full description <http://apply.interfolio.com/74302>

University of New Haven

Non-Tenure Track Assistant Professor in Computer Science

The University of New Haven invites applications for Non-Tenure Track Assistant Professor in Computer Science for August 2020.

For full description click [here](#)

University of Notre Dame

Faculty Director for the new Lucy Institute

Thanks to a transformative \$25 million gift from alumnus Robert Lumpkins and his wife, Sara, the University of Notre Dame is making a major new investment related to the role that data can play in addressing societal challenges. The centerpiece of this initiative is the Lucy Family Institute for Data & Society ("Lucy Institute"), which is named in honor of the Lumpkins family. The Lucy Institute will elevate the role of "trusted" data while respecting the privacy and dignity of the individual. The institute will develop and support multidisciplinary research on applied, methodological, and data engineering questions related to societal challenges. This position is the founding faculty director for the new Lucy Institute. The new director will have a national or international reputation in the area of data & society and demonstrated leadership, entrepreneurial, and organizational abilities. The director will be appointed in an academic unit in his or her home discipline in addition to the appointment as faculty director of the Lucy Family Institute for Data & Society.

Apply directly here, <https://apply.interfolio.com/75078>

University of Waikato

School of Computing and Mathematical Sciences

Division of Health, Engineering, Computing and Science (Based in Tauranga)

We are seeking to appoint a Lecturer who will contribute to teaching, postgraduate

Professional Opportunities

supervision, administration and research at our Tauranga campus, where AI Technology is a key focus. Applicants must have the ability to teach at all levels of study.

You will have demonstrated success in undergraduate teaching including the ability to lecture to large numbers and conduct small group tutorials effectively, along with the ability to contribute to the graduate and postgraduate teaching programmes and the ability to maintain an active high-quality research programme. A Ph.D. (or close to finishing at the time of application) in a relevant discipline area is required as is the ability in obtaining external research funding.

Current salary range for Lecturers is NZ\$75,514 to \$90,946 per year, depending on qualifications, skills and experience.

Enquiries of an academic nature should be directed to the Chairperson of Department, Professor David Bainbridge, email: david.bainbridge@waikato.ac.nz

Vassar College

Computer Science Department Visiting Assistant Professor

The Computer Science Department at Vassar invites applications for a two-year Visiting Assistant Professor to begin in Fall 2020.

Vassar College is an affirmative action and equal opportunity employer with a strong commitment to increasing the diversity of the campus community and the curriculum, and promoting an environment of equality,

inclusion, and respect for difference.

Candidates who can contribute to this goal through their teaching, research, advising, and other activities are encouraged to identify their strengths and experiences in this area. Individuals from groups whose underrepresentation in the American professoriate has been severe and longstanding are particularly encouraged to apply.

A commitment to excellence in teaching and research is expected. A Ph.D., ABD, or equivalent experience in Computer Science is required (by August 2020). Strong candidates in all areas of CS are encouraged to apply. Teaching responsibilities will include one lab course and one non-lab course per semester.

Vassar faculty are committed teachers/scholars who bring research and creative discovery to life for students in classrooms, labs, and individually mentored projects. Vassar has a strong undergraduate Computer Science program, whose history dates back to 1963. The department, housed within Vassar's Integrated Science Commons, maintains Linux laboratories for introductory and advanced instruction. Each professor is provided a Linux workstation and laptop. For more information see <http://computerscience.vassar.edu/>.

Vassar is a highly selective, coeducational liberal arts college of 2450 undergraduates, located in the beautiful and historic Hudson Valley, seventy-five miles north of New York City. Poughkeepsie benefits from rich cultural diversity and has convenient commuter rail access to NYC.

Candidates should submit a cover letter; resume; graduate school transcript (unofficial copies accepted initially); diversity statement highlighting contributions to or future plans for promoting diversity and inclusion through teaching, research or professional involvements; statement of teaching experience/philosophy; and three letters of recommendation (at least one must address teaching). To apply, please visit employment.vassar.edu/applicants/Central?quickFind=52981.

Review of applications will begin February 28, 2020 and continue until the position is filled. Applications received by March 28, 2020 will receive full consideration. Please direct any questions to Luke Hunsberger, Computer Science Chair (hunsberger@vassar.edu).

VCU College of Engineering

Computer Science Faculty Openings

The Department of Computer Science of the College of Engineering (CoEgr) at Virginia Commonwealth University (VCU) has multiple faculty openings at all ranks. As part of a premier research university situated in Virginia's capital city, VCU's computer science department has bachelor's, master's, and doctoral programs and collaborates closely with many VCU schools and departments. Additional information about the department's programs and faculty may be found at <http://www.egr.vcu.edu/departments/computer/>.

Professional Opportunities

VCU is a Carnegie-classified very high research activity university and is one of the top 100 universities in the U.S. in federal R&D expenditures. The CoEgr is in an extensive growth stage. Since 2008 it has doubled the number of its faculty and is slated to open a state-of-the-art research facility in 2020. Embarked on rapid growth, the computer science department currently has 26 tenure-track, tenured and term faculty members.

Candidates should be qualified for an appointment based on excellence in publication, funding and graduate and undergraduate teaching. Well-qualified candidates in all areas of computer science will be considered.

Required qualifications: Applicants must have a doctorate in computer science or software engineering. The desirable candidate with a Ph.D. in computer science will have relevant professional experiences, such as completion of postdoctoral research training or relatable experience in industry. Candidates with a Ph.D. in areas of software engineering or cybersecurity who do not yet possess professional experience are also encouraged to apply.

Senior-level candidates must have a well-developed research portfolio with evidence of substantial external funding.

Application Process: Candidates should upload their application at www.vcujobs.com position F66090 a single PDF file in the "other document" section that includes, in this order: a cover letter, curriculum vitae, research and teaching statements, and the names and e-mail addresses of four references (five

references for Full Professors). Reference letters will be requested by the search committee only for the short-listed candidates. Only complete applications that meet the required qualifications will be considered. Review of applications will start April 6, 2020, and will continue until filled. For additional information, please contact Chair of the faculty search committee, Prof. Lukasz Kurgan, email: lkurgan@vcu.edu or phone: (804) 827-3986.

Virginia Commonwealth University is an equal opportunity, affirmative action employer. Women, minorities, veterans, and persons with disabilities are encouraged to apply.

Virginia State University

Assistant/Associate Professor of Computer Science

Virginia State University is an HBCU that is one of Virginia's two land-grant institutions and is located 20 minutes south of Richmond, VA. The University offers 36 undergraduate degree programs, 16 graduate programs, and two doctoral programs including majors in the Colleges of Agriculture; Business; Education; Engineering and Technology; Humanities and Social Sciences; and Natural and Health Sciences.

The Department of Engineering and Computer Science invites applicants for multiple tenure-track positions as Assistant/Associate Professor of Computer Science beginning in Fall 2020. Areas of interest include Parallel and Distributed Computing; Cyber Security; Data Science; Networking; Software Engineering; and

Artificial Intelligence, although other areas will be considered.

Review of applicants will be on a rolling basis until the position is filled.

The full advertisement and application process can be found at <http://www.vsu.edu/vsujobs/position-F0036.php>.

Virginia Tech

5G Wireless Security Testbed Director

The Commonwealth Cyber Initiative (CCI) is a state-funded \$20M/year effort calling on higher education institutions and industry to build state-wide ecosystem of cyber-related research, education, and engagement in Virginia. For a detailed description of CCI's vision and plan for implementation, see the blueprint at <https://vt.edu/cci-blueprint>.

In support of the CCI initiative, Virginia Tech is seeking a 5G Wireless Security Testbed Director to lead the development, deployment, and use of the CCI 5G wireless security testbed. This position will be located in the Virginia Tech Research Center in Arlington, VA, part of the greater Washington D.C. Metropolitan area.

The Director will possess a thorough understanding of cellular system design and will have a strong publication record in one or more specific research focus areas in cellular communication and security. A particular background in design and implementation of virtualized software and hardware of 5G core and RAN systems is highly desired. The Director will participate

Professional Opportunities

in and demonstrate excellent capabilities in electrical engineering subjects such as RF, digital, and analog design.

For more information about this dynamic opportunity and how to apply, please visit www.jobs.vt.edu, reference number 513055.

This position is an administrative/professional faculty position eligible for faculty-related university benefits.

Virginia Tech is an equal opportunity/affirmative action Institution.

Whitman College

Visiting Assistant Professor of Computer Science

The Computer Science Department at Whitman College is seeking candidates for a one-year position at the rank of Visiting Instructor or Visiting Assistant Professor, beginning August 2020. M.S. or higher education teaching experience in Computer Science or a related discipline is required.

The successful candidate will offer multiple sections of either Introductory Programming in Python or Data Structures in C++ or Java, plus at least one further Computer Science course at an intermediate or advanced level. The teaching load is five-course sections per year; our largest sections include about 30 students.

Whitman College is committed to cultivating a diverse learning community. Applicants should explain how their classroom will serve to create and sustain an inclusive learning environment. This statement can be included in the cover letter or the teaching statement. In their cover letter, candidates should address their interest in working at a liberal arts college with undergraduates.

To apply, go to <https://whitmanhr.simplehire.com/>, click "Faculty" and "Visiting Assistant Professor of Computer Science". The online application will prompt you to submit all of the required materials:

a letter of application; curriculum vitae; statement of teaching philosophy; evidence of demonstrated or potential excellence in undergraduate instruction; and, the contact information for three people who will be contacted for letters of reference.

Review of applications will begin immediately and continue until the position is filled.

Whitman College is building a diverse academic community and especially encourages applications from women, members of historically underrepresented minority groups, persons with disabilities, and others who would bring additional dimensions to the college's learning environment. Whitman College is an EEO employer.

For additional information about Whitman College and the Walla Walla area, see www.whitman.edu and www.wallawalla.org.