### Session 1: Overview, components, and goals of the mentoring program

Thursday, September 7, 2023 (7-8:30pm ET)



Computer and Information Science and Engineering Graduate Fellowships

#### **CSGrad4US Mentoring Program**

- Goals and Program Structure
- Cohort 3 Stats
- Organization and Expectations

### **Getting a PhD**

- CISE PhD programs
- Research and Career Paths
- > Overview of admission timelines



# **Congratulations!**

... on deciding to pursue research and a PhD in a CISE field

... on being awarded an NSF CSGrad4US Fellowship

#### Fellowship Goal:

Increase the number of diverse, domestic researchers completing a PhD in a CISE field.



#### The domestic PhD production of national importance



—Resident

take industrial positions (CRA)

### A Fellow must enroll in a CISE Ph.D. program

Specifically, PhD programs offered by

- Computer Science (CS)
- Computer and Information Sciences (CIS)
- Computer Engineering (CE)
- Schools or College of Computing
- Some interdisciplinary programs (generally, programs where the student applies to a CISE department as their home department)

PhD programs with <u>CIP codes</u> 11.01 (CIS), 11.04 (IS), 11.07 (CS), or 14.09 (CE) are CISE PhD programs.

Other CIP codes need NSF approval (approval not ensured).



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### U.S. Need for PhDs, especially domestic PhDs

- CS Departments are expanding
  - CS and IS UG enrollment still booming
  - computing courses are increasingly taken by non-majors
  - faculty retirements
- Startups rely on PhDs to drive innovation
- 3000 openings annually for CS research scientists projected in the next decade

- US Government labs need domestic PhDs
- Only 37% of PhDs awarded to domestic students is hurts US research competitiveness
- International PhD graduates have increasingly more options other countries

# **NSF CSGrad4US Fellowships**

- Vision & Funding
  - National Science Foundation
  - Directorate for Computer and Information Science and Engineering (CISE)
- Mentoring
  - CRA, CRA-E, CRA-WP, CERP
  - Program Leaders
  - Mentor Program Associates
  - Coaches
  - Area Advisers (determined by research area need)
  - Panelists
- YOU! The future Fellows = Mentees



# **NSF's Role and Mission**

The National Science Foundation (<u>NSF</u>) supports basic research and people to create knowledge that transforms the future.

- Its mission is to promote the progress of science and to advance the national health, prosperity, and welfare.
- CISE's mission is to enable and support leadership in computing, communications, and information science and engineering

NSF supports over 85% of all federally-funded academic CS research (Source: NCSES).



# CRA, CRA-E, CRA-WP, and CERP

<u>CRA</u>'s mission is to enhance innovation and strengthen research and advanced education in computing.

• CRA has over 200 members representing academia, industry, and governments in North America.

<u>CRA-E</u> focuses on building a pipeline for society's needs of a continuous supply of talented and well-educated computing researchers.



# CRA, CRA-E, CRA-WP, and CERP

<u>CRA-WP</u> focuses on increasing participation and improving the access and opportunities of individuals from populations underrepresented in computing research and education.

<u>CERP</u> is CRA's Center for Evaluating the Research Pipeline. CERPs mission is to increase diversity in computing research through evaluation and research.



# **Goals of the Mentoring Program**

- Guide Mentees through the PhD application process
  - advise on preparing the application material
  - help identify research areas and potential letter writers
  - select appropriate CISE PhD programs to apply to
  - advise on acceptances
- Provide insight into how to be successful in graduate school and research
- Offer mentoring through the first year in graduate school

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# Why a Mentoring Program?

Students returning from the workforce have different needs from students applying while in school.

- Contact with faculty and grad TAs is not recent
- Prior experiences may not have focused on grad school
- Coursework and exams may no longer feel natural



### From the workforce to graduate school: How do PhD programs view us?

Students returning from the workforce to grad school are generally more mature and disciplined, with

- · a broader perspective on interests
- technical and soft skills experience
- experience with *real* tools, data, project teams



## Who is running the mentoring program?

**CRA Staff** 

4 Mentoring Program Leaders

3 Mentoring Program Associates

24 Coaches (12 coaches continuing from cohort 2)



# **Program Leaders**



Susanne Hambrusch, Purdue University



Russ Joseph, Northwestern University



Lori Pollock, University of Delaware



Kelly Shaw, Williams College



# **Mentoring Program Associates**



### Dorian Arnold, Emory University



### Maria Gini, U of Minnesota



#### Clayton Lewis, UC Boulder





# **Staff & Evaluation**

Lauren Lashlee, CRA, Program Associate



Kayley McDonald, CRA, Program Assistant



Erik Russell, CRA, Director of Educational Initiatives



Eniola Idowu, CERP, Research Associate



Erin Carll, CERSE, Associate Director



### External Evaluator University of Washington



#### **Erin Carll** Research Scientist Center for Evaluation & Research for STEM Equity



## **Program Evaluation**

Program evaluation will take take place throughout the mentoring program and continue during grad school

#### Goals

- Learn about your experiences before and during the program
- Identify what works well, what impacts progress, what can be improved

#### How?

- Online surveys & virtual focus groups
- Polls and other occasional opportunities for your feedback

#### Your participation in evaluation will lead to a better program! Email: <u>ecarll@uw.edu</u> (noreply@gemailserver.com)



# **About Cohort 3**

64 CSGrad4US awards were made

64 Mentees registered for the mentoring program

- BA/BS institutions on next slide
- 14 Mentees have an MS degree



#### First BS/BA Institutions of Cohort 3

Arizona State University (2) Bard College Bowdoin College Brigham Young University Provo Brown University (2) Cal State Polytechnic Pomona (2) Cal State University Monterey Bay Carnegie Mellon University Case Western Reserve University Cheyney University of PA **Cleveland State University** Cornell University (2) **Drexel University** Florida A&M University George Washington University Grinnell College Harvard University Howard University James Madison University

Johns Hopkins University (2) Kean University (2) Kent State University Morehouse College Mount Wachusett Community College Northern Kentucky University Northwestern University Reed College **Rice University** Rutgers University New Brunswick Stanford University Stony Brook University Temple University (2) Texas State University The University of Texas Austin (2) The University of Texas El Paso The University of Texas San Antonio University of Alaska Fairbanks UCLA(2)

UC San Diego (2) UC Santa Barbara University of Central Florida University of Colorado Boulder University of Hartford University of Louisiana at Lafayette University of Massachusetts University of Minnesota (2) University of Puget Sound University of Rochester University of Washington (3) University of Zanjan Valencia College Vanderbilt University Virginia Polytechnic University Weber State University Yale University



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#### **Completion Year of First BS Degree**

For about 25%, the first degree is not in computer science 19% have BS degrees from 2016 or earlier



### Introductions: Meet Fellow Mentees in a Breakout

Tell others about yourself (3 minutes max)

- 2 sentences about your background
- Your reasons for pursuing a PhD and research
- How did you hear about the CSGrad4US Fellowships?
- Share something unique about you



### **Components of the Mentoring Program**

- Group Mentoring Sessions
- Panels
- Individual Coaching
- Weekly Office Hours
- Area Advisers
- Assessment

#### To support active communication

- Discord server to support community building among Mentees
- Share advice and insight from cohort 1 and 2 Fellows
- Weekly office hours for individual advice



### **Group Mentoring Sessions**

Provide general application, admission, research, PhD programs, grad school, and research career information:

- 1. Overview: Components and Goals of the Mentoring Program
- 2. Preparing a Strong PhD Graduate Application. What skills, qualities and experiences PhD programs are looking for.
- 3. PhD Application Process and your Decision
- 4. Research as the Key PhD Degree Component
- 5. Succeeding in Graduate School
- 6. Deciding on an Admission Offer to Accept (March 2024)

Held on Thursdays 7pm ET; will be recorded



### Panels

- 1. What I wish I knew when I applied to graduate school Panelists are 3rd year PhD students
- 2. Q&A with Cohort 1 and 2 CSGrad4US Fellows
- 3. What I wish I knew when I started graduate school Panelists are recent PhD graduates

Held on Thursdays 7pm ET; will not be recorded



### Coaching

#### 12-week coaching includes

- individual advice, guidance and feedback
- builds on material covered in the mentoring sessions
- research area advisers are available (for Mentees whose coach is not in the chosen research area)

**Fall 2023:** each Mentee completes an application package and identifies a list of CISE PhD programs

**Spring 2024:** a Mentee decides on the acceptance to a CISE PhD program, <u>or</u> has a plan on how to increase being competitive for applying in 2024

Think carefully about 1 vs. 2 application opportunities!



### Have You Met With Your Coach?

- If you haven't met/communicated with your coach yet, please reach out to them.
- Consider discussing the content of this session with your coach



### What we expect from each Mentee

- Attend and participate in mentoring sessions whenever possible (recordings will not have breakouts)
- Attend panel sessions
- Come to office hours or contact us when you have questions or concerns
- Work with your coach and follow the (tight) time frame
- Complete your application and identify a set of CISE programs/schools



#### How does the Fellowship and the stipend work?

#### About the stipend and requirements

- must be a full-time student in a CISE PhD program
- \$37K (in 2023) stipend for 12 months;
- A \$12K educational allowance covers Fellow's fees and tuition (paid to the institution)
- Fellowship is a 0.5 appointment.
  - The other 0.5 appointment is taken up by courses (including research)
- 3 years of support can be used within 5 years
- Rules of <u>GRF fellowships</u> apply unless stated otherwise

#### How to "activate" the fellowship?

- Mentee accepts admission to a CISE PhD program and lets CRA contact know
- At that point, you become a Fellow

### **Related Questions**

- Does the Mentoring Program provide some additional financial support?
  - \$750/mentee grad application reimbursement fund
  - \$1500/mentee for technical conference travel
  - \$1500/mentee for attending CRA-WP's Grad Cohort Workshop in Spring
- Can a PhD student on the fellowship take on additional employment?
  - summer internships are common; should complement the educational/research experience (see GRF document)
  - accepting outside employment can impact adviser's support (as an adviser) and may violate fellowship rules
  - adding ¼-th time RA/TA appointment is up to the adviser and the institution

# **Canvas and Google Drive**

- Canvas is a convenient learning management system
  - Allows us to organize course materials
- Google Drive will be used to house documents you will work on for this program.
  - You should have received an invitation to edit a folder titled your Lastname, Firstname.



# **Google Drive**

Your coach has access to your Google Drive folder and will be able to collaborate with you on any documents you create in this folder.



To log into Canvas, search for email titled "Course Invitation" and create an account if you haven't already. Once you've create an account you can type <u>cra.instructure.com</u> in the URL bar to login. You will see this screen.



View Grades



#### **Course Homepage**





Welcome/Instructions

The Student Resource Course provides users with the resources they need to successfully use Canvas. The course includes videos, guides, and detailed instructions. Click on the buttons below to learn more.

Getting Started 0 2 CANVAS CALENDAR DASHBOARD ٥ Ċ FILES NOTIFICATIONS USER SETTINGS CANVAS CANVAS Assignments, Discussions, Quizzes, and Grades 0 -DISCUSSIONS ASSIGNMENTS



#### Calendar





The left-side navigation menu includes:

Account

(3)

밑

Courses

28

Groups

Calendar

Inbox

History

Help

- · Modules: A gateway to the Course Overview, resources and assignments
- · Assignments: Student action items with respective due dates
- · Discussions: A way to interact with your peers

New to Canvas? Please take some time to review the Resources for Students &, or Resources for Instructors &, as needed.

If you are accessing this course from a mobile device, please review the following: Mobile Guides - Canvas Student c7 .



#### Modules

? Help

Organized by week, "Modules" allows you to access assignments, files and other content.

$\bigcirc$		Modules
Account Cashboard	Home Syllabus Modules Assignments Discussions	Collapse All    Resources
Courses Groups Calendar	Grades Collaborations Google Drive Dropbox for Canvas	Week 1: 09/5/22     Review CV and Statements     Sep 11   0 pts      Attend Mentoring Session 1 - CSGrad4US Overview & Why The PhD     Sep 8



# **QUESTIONS?**



# PhD Students Are a Key Driver of Research and Innovation

# **CSGRAD4US** & mentoring program

Computer and Information Science and Engineering Graduate Fellowships

### **CISE Researchers Pursue Many Areas**

Security / Privacy / Information	on Assurance	Social Computing / Social Informatics				
Human-Computer Interaction	<sup>n</sup> Networks	Artificial Intelligence Natural Language Pro	/ Machine Learning/ ocessing			
Robotics / Vision T	heory and Algorit	hms	Quantum Computing			
Software Engineering	licely and agent	Ethics				
Operating Systems	Graphics / Visuali Computing Educa	zation High-Per tion	formance Computing			
Scientific / Numerical Compu	ıting	Programming Languages / Compilers				
Information Systems	Databases / Inforr	mation Retrieval	Information Science			
Informatics: Bioinformatics	Other Science	Hardware / Architect	ure CRA Computing Research Association			

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Research areas of cohort 1 and 2 fellows as they appear on the T-shirt of CSGrad4US fellows



### **CISE** Research happens in CS, CIS

What programs are a CISE Ph.D. program? Programs offered by a

- Computer Science (CS) Department
- Computer and Information Sciences (CIS) Department
- Computer Engineering (CE) Department
- School or College of Computing
- most Information Science (IS) Departments

See <u>https://cra.org/csgrad4us/#Guidance</u> for more guidance



#### CS Departments are administratively housed where?

- Historically, CS departments are in
  - Engineering Colleges, e.g., Illinois, Michigan, NC State, VT,, U. of New Mexico
  - Arts/Sciences Colleges, e.g., Purdue, Iowa, Maryland
- More recently, CS departments are also in computing focused colleges/schools
  - Computing, e.g. Georgia Tech, CMU, MIT, Clemson
  - Computer & Information Sciences, e.g Cornell, UMass, Pitt, UC Irvine, IU, Wisconsin
- Information Schools may not contain CS, e.g. Penn State (IST), UW, Michigan

In many institutions, CISE programs exist in more than one department.

Admission is generally not coordinated!



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#### What qualifies as a CISE Ph.D. program?

PhD programs offered by

- Computer Science (CS)
- Computer and Information Sciences (CIS)
- Computer Engineering (CE)
- Schools or College of Computing
- most Information Science (IS) Departments.

Plus,

- Interdisciplinary programs where the student applies to a CISE department as their **home** department
- Interdisciplinary program requiring graduate level CS/CS/IS courses.

See <a href="https://cra.org/csgrad4us/#Guidance">https://cra.org/csgrad4us/#Guidance</a>



### Pursuing a PhD (with a CS UG degree)

Your undergraduate education = foundations + breadth in CS through shared classroom experiences Have an MS degree? May or may not have prepared you for research

**Your PhD** = research apprenticeship with research expert (advisor) + other mentors

- = deep dive into research problems to advance knowledge
  - + training in research process
  - + background courses
  - + milestones



### **Typical PhD Career Options**

#### Academic

- Tenure-track faculty (R1/R2, MS, 4-years institution)
- Teaching or research faculty at R1/R2 institution

#### **Non-academic Research**

- Scientist in a research lab (industry, government, national labs)
- Applied research positions

#### **Research-driven Leadership**

Entrepreneur, start-up, consulting, technical leadership



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### CSGrad4US Is Here to Make It Happen for YOU!



### **CSGrad4US Mentee Timeline**

- Undergrad degree in CS or related area
- Industrial experiences
- Interest in a PhD

 Give them resume, personal statement & transcripts
 Finalize application

Ask letter writers

- Finalize application materials and get feedback
- Submit applications



- Update your resume
- Draft personal statement
- Identify letter writers
- □ Select schools to apply to
- If needed, study for and take GREs

- Hear from schools
- Visit schools
- Make a decision!





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#### CSGrad4US 2022 Schedule

# **School Admissions Timeline**

- Departments identify admissions goals (qualitative and quantitative targets)
- Dec-Jan:
  - Assemble applicant portfolios
  - Comprehensive and holistic portfolio reviews
- Feb-Mar:
  - Down selection processes may be strictly based on portfolio or may be supplemented by interviews
  - In-person campus visits (may occur before or after admission decisions)
- Apr: Admitted applicant decision (typically April 15th deadline)
  - Admitted students are supported as TAs or RAs or by Fellowships



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### **Reflective Activity**

- Think back to when you graduated from college with your highest degree.
  - How did you view getting a PhD then?
  - What changed your view (if it did)?
  - How can this fit into your application statement?
- Where do you see yourself in 7 years?
- Discuss with your coach (put your writing on the GDoc or Canvas)



### **QUESTIONS?**

### **Please complete the poll**

### **SESSION 2**

**Thursday, September 14, 7:00-8:30pm ET** Preparing a Strong PhD Graduate Application



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