Lightning Introductions

Cyber Social Learning Systems
August 29-30, 2016
Social Sensing: Humans as “Sensors” in Cyber-physical Systems

http://web.engr.illinois.edu/~zaher/
Visualization + Analytics for Complex Enterprise System Intelligence

http://entsci.gatech.edu
Elizabeth Churchill / Google
Jennifer Clark / Georgia Tech

How do we equitably design, development, and deploy of an emerging class of cross-platform, service-integrated, technology products to enhance access and opportunity and/or create a platform for economic development in CITIES and COMMUNITIES.

http://urbaninnovation.gatech.edu/people/person/3bb1699b-f85f-5617-b42a-cb42fe54005f
Lori Clarke / University of Massachusetts Amherst

Modeling and analysis of complex human-intensive systems, such as healthcare processes, in order to reduce errors and provide on-line, context-aware guidance.

http://laser.cs.umass.edu/people/clarke.html
Mary Czerwinski / Microsoft Research

Affective computing, technology for behavior change

Microsoft Research/UW iSchool

How is data science emerging as a discipline of software engineering? How should it?

How can we support “end user programming” for ML-based systems?

research.microsoft.com/~rdeline
Nicola Dell / Cornell Tech

Designing, building, and evaluating new computing systems for underserved communities

http://nixdell.com
How can we place CSLS research within national priorities?

http://cra.org/ccc/about/ccc-council-members/ann-drobnis/
Gerhard Fischer / University of Colorado, Boulder

- Lifelong learning, self-directed learning, interest driven learning
- Learning-on-demand
- Meta-design
- Cultures of participation
- Urban Planning

CU — University of Colorado, Boulder

http://l3d.cs.colorado.edu/wordpress/people/home-folders/gerhard-fischers-home-page
- Cyber-social Learning Systems (CSLS) as a goal to improve human society
- The extension of the CSLS concept to improve individual and population health: the Learning Health System
- The interdisciplinary science underlying achievement of high-functioning, stable and sustainable CSLS
- Establishing an academic department dedicated to this science
- Educating a new generation of “health infrastructuralists” who practice this interdisciplinary science
Lise Getoor / UC Santa Cruz

- Machine learning and probabilistic reasoning algorithms which capture both relational and probabilistic dependencies
- Special interest in applications to data integration and cyber-social domains

https://getoor.soe.ucsc.edu/
Ashok Goel / Georgia Tech
How can we detect and eliminate bias in learning systems?

people.eecs.berkeley.edu/~graham/
William Griswold / University of California, San Diego

Ubiquitous Computing, Software Engineering, and Educational Technology

http://cseweb.ucsd.edu/~wgg/
Understanding the intersection of CSLS and policy

http://cra.org/blog
● How can we better characterize the power, limits, applicability of our models of large-scale social systems?

● What new tools, abstractions, representations could provide robust & scrutable methods for designing, injecting, and monitoring desired changes in complex cybersocial systems?

● When can we generalize about different instantiations of “similar” systems/subsystems, e.g. in different locations?

● What problems are most amenable to modeling & control?
Marie Le Pichon / GA Tech

Data Privacy and Security, Governance, Compliance, Requirements Engineering
Bill Maurer / UC Irvine

Payment infrastructures, public infrastructures, and incentives; accounting and accountability as sociotechnical problems

http://faculty.sites.uci.edu/wmmaurer/
http://imtfi.uci.edu
https://moneyfutures.org
How can cities collect, curate and provide useful data to support positive emergent behavior and continuous improvement by a loosely coordinated set of actors?
Definition and analysis of complex processes in critical domains such as healthcare to assure correctness, robustness, security
Focusing on process language design and implementation
Sarun Paisarnsrisomsuk / University of Virginia

- Formal methods
- Machine Learning
- Software Synthesis
- Learning Health Systems

http://www.cs.virginia.edu/~sp4et/
What are key tradeoffs that the resolution of which will lead to tipping points to enable dramatic change in the healthcare enterprise?
How can we cost-effectively develop and validate complex systems that learn?

http://www.cs.umd.edu/~aporter
How can we shape cyber-social systems to get people into shape?

How do we study and engineer the human-AI social ecology?

www.peterpirolli.com
Biodiversity Citizen Science:
What HCI & AI can contribute
Motivating long-term participation
Reputation & reward systems
Collaboration of scientists & volunteers
Data quality

http://ischool.umd.edu/faculty-staff/jennifer-j-preece
William Rouse / Stevens Institute of Technology

Research Interests:
Human decision making and problem solving
Strategy formation, evaluation & implementation
Analysis, design & evaluation of information systems
Fundamental change of organizational systems

www.stevens.edu/ccse
www.BillRouse.com
How do we synergistically bring together diverse stakeholders and seemingly divergent disciplines to invent and grow a novel science of CSLS that will reshape our future as a foundation for innovatively and collaboratively addressing society’s greatest challenges?

http://lhs.medicine.umich.edu/people/joshua-c-rubin
William Scherlis / CMU

Software and systems assurance, including technical, economic, and policy dimensions. Engineering practices and business incentives to build in safety, security, and reliability.

http://www.cs.cmu.edu/~wls
Deep Learning, institutional innovation, situated learning
radical innovation
Exponential times
Socio-technical-humanistic approach

www.johnseelybrown.com
David Ayman Shamma / CWI

- Understanding community-driven human in the loop AI systems for CSLS.
- Preservation, viz, and retrieval of community lead data and interactions.

http://shamurai.com
Governance:
* resolve differences,
* motivate contributions,
* reward collaboration,
* encourage leaders,
* cope with malicious behavior
Jonathan C. Silverstein / Kanter Health Foundation

Large scale collection of human phenotypic data across virtual organizations and its innovative use to improve human health

ComputationDoc.com
Wide-field ethnography: How to enable contextually rich study of collaboration in complex naturalistic physical, social, economic, cyber systems (PSECs)?

https://faculty.washington.edu/socha/
Jim Spohrer/ IBM Corporation

Smart & Wise Service Systems (10x learning rates)
How can better rules (test beds) evolve as fast as tech?
Augmented Intelligence/Cognitive Systems
Artificial Intelligence/Augmented Reality
Service Science Management and Engineering +
Design Arts and Public Policy
Kevin Sullivan / University of Virginia

• How might we drive emergence of advanced computing for ultra-large-scale societal systems?  
• How should we integrate computing with the human and social elements of complex systems?  
• How can we foster, predict, analyze, and constrain emergent behavior in such systems?

KevinJSullivan.com
Stephanie Teasley / University of Michigan

Learning Analytics: How can we personalize learning so that every student can be successful?

https://www.si.umich.edu/node/9898
What is the most effective way to personalize design in highly variable user populations?

How can we better harness behavioral data for use in design decision making?

http://www.enme.umd.edu/faculty/vaughn-cooke
Howard Wactlar / Carnegie Mellon University

- Cyber-human systems for augmented cognition and cognitive prosthetics
- Will reliance on machine decision making ultimately diminish human problem-solving capability for the general population?
Visual Analytics: How does collaboration lead to learning and productivity in Physical Social Economic Cyber Systems (PSECs)?

https://skipwalter.net/
How can we protect us from ourselves?
The far majority of successful cyber attacks are caused by human error by IT staff and users.

http://collaboration.csc.ncsu.edu/laurie/
How can we expand and grow the community interested in CSLS research and development?