Workshop on Computing Research in Industry

Federated Computing Research Conference

June 18, 2023   | Orlando, Florida

CRA-I Co-Chairs and Organizers
Vivek Sarkar (Georgia Tech)
Ben Zorn (Microsoft)

WiFi Network: FCRC20203
Password: fcrc23ACM
HAPPY FATHER’S DAY!

“Now, before we go, does anyone have to empty their cache?”
Computing Research Association

• **Mission:** advance research and higher education in computing by strengthening partnerships across academia, government, and industry. CRA executes this mission by leading the computing research community; informing policymakers and the public; and championing a diverse, welcoming, equitable, and socially responsible computing research community.

• **Members include** ~ 180 computing departments in academia and ~ 20 companies and national labs.

• **Significant thought leadership and influence**, especially in academia and government, through long-established committees.
CRA-I Committees

- Government Affairs
- Dean’s Council
CRA-Industry Overview

**CRA Mission:** The mission of the Computing Research Association is to **catalyze** computing research by joining with industry, government, and academia.

**CRA-I Mission:** Convene **industry partners** on computing research topics and connect them with constituents for mutual benefits and improved societal outcomes.

**Who**
- Companies of all sizes and industries engaged in computing research

**What**
- Convene members to share perspectives and form consensus on emerging topics in computing research
- Coordinate with other CRA stakeholders

**How**
- Interview stakeholders
- Convene roundtables & workshops
- Produce white papers and reports
CRA-I Steering Committee

Lisa Amini
IBM

Mary Hall
University of Utah

Fatma Özcan
Google

Chris Ramming
VMware

Vivek Sarkar (Co-Chair)
Georgia Institute of Technology

Divesh Srivastava
AT&T

Ben Zorn (Co-Chair)
Microsoft

Helen Wright (Senior Program Associate)
CRA
105 responses --- indicates strong interest by CRA member organizations

Significant industry engagement is under way between faculty and industry, with an increasing trend

Mix of positive and negative aspects, with the positives outweighing the negatives

Overall: clear opportunity for CRA to add value to industry, academic and government partners by facilitating and strengthening their interactions
Department chairs’ perception of impact of faculty engagements with industry on different constituencies in department
Types of industry organizations involved in faculty engagements

- Large tech companies
- Tech startups
- Non-tech companies with tech needs
- Other

Percentage of Respondents

CRA-I
Computing Research Association
Industry
Example: Cloud Computing

- Interviews with community members in Feb 2021
- Roundtable in Sept 2021
- Hybrid workshop in March 2022
- Report June 2022
Recent Panel/Roundtable/Workshop Topics

- Computing Research in Industry
- Industry/Academia Interactions
- Best Practices on Using the Cloud for Computing Research
- Accessibility
- Corporate Responsibility and Computing Research
- AI, Society, and the Role of Computing Research
- Value and Relevance of a PhD in Industry
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:30 PM</td>
<td>LUNCH</td>
<td>Cypress 3</td>
</tr>
<tr>
<td>01:30 PM</td>
<td>CRA-Industry Welcome</td>
<td>Magnolia 13</td>
</tr>
<tr>
<td>02:00 PM</td>
<td>&quot;AI, Society, and the Role of Computing Research&quot; Panel</td>
<td>Magnolia 13</td>
</tr>
<tr>
<td></td>
<td>● Lisa Amini (IBM)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Margaret Martonosi (NSF)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Bart Selman (Cornell)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderator: Ben Zorn (Microsoft)</td>
<td></td>
</tr>
<tr>
<td>02:45 PM</td>
<td>&quot;Value and Relevance of a PhD in Industry&quot; Panel</td>
<td>Magnolia 13</td>
</tr>
<tr>
<td></td>
<td>● Sujata Banerjee (VMware)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Srilatha (Bobbie) Manne (AMD)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Parthasarathy Ranganathan (Google)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderator: Vivek Sarkar (Georgia Tech)</td>
<td></td>
</tr>
<tr>
<td>03:30 PM</td>
<td>BREAK</td>
<td>Magnolia 13</td>
</tr>
<tr>
<td>04:00 PM</td>
<td>Keynote - &quot;Driving Innovation in Academia and Industry&quot;</td>
<td>Magnolia 13</td>
</tr>
<tr>
<td></td>
<td>Mark D. Hill</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Microsoft (Azure) and U. Wisconsin (Emeritus)</td>
<td></td>
</tr>
<tr>
<td>04:30 PM</td>
<td>RECEPTION</td>
<td>Magnolia Patio</td>
</tr>
<tr>
<td>05:15 PM</td>
<td>Workshop Ends</td>
<td>Palms Foyer</td>
</tr>
</tbody>
</table>
AI, Society, and the Role of Computing
Research Panel

- Lisa Amini (IBM)
- Margaret Martonosi (NSF)
- Bart Selman (Cornell)

Moderator: Ben Zorn (Microsoft)
Join at slido.com
#3970538

Start presenting to display the joining instructions on this slide.
Value and Relevance of a PhD in Industry

Panel

- Sujata Banerjee (VMware)
- Srilatha (Bobbie) Manne (AMD)
- Parthasarathy Ranganathan (Google)

Moderator: Vivek Sarkar (Georgia Tech)
Employment Trends for CS Ph.D. graduates
(2022 Taulbee Survey, Figure D6)
## Employment of New PhD Recipients By Specialty

(2022 Taulbee Survey, Table D4)

### Table D4. Employment of New PhD Recipients By Specialty

<table>
<thead>
<tr>
<th>North American PhD Granting Depts.</th>
<th>Tenure-Track</th>
<th>Researcher</th>
<th>Postdoc</th>
<th>Teaching Faculty</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>22</td>
<td>7</td>
<td>40</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Industry (Total)</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>36</td>
<td>48</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>North American, Other Academic</th>
<th>Other CS/CE/I Dept</th>
<th>Non-CS/CE/I Dept</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Industry (Total)</td>
<td>25</td>
<td>5</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>North American, Non-Academic</th>
<th>Industry</th>
<th>Government</th>
<th>Self-Employed</th>
<th>Unemployed</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>280</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Industry (Total)</td>
<td>965</td>
<td>24</td>
<td>9</td>
<td>5</td>
<td>30</td>
</tr>
</tbody>
</table>

### Employment by Specialty

- **63%** of new CS PhD students were employed by industry.
- **7%** of new CS PhD students were employed as tenure-track faculty.
Sujata Banerjee, VMware

Sujata is a VP at VMware Research. She works on a broad spectrum of core research topics in systems and algorithms.

Research Area: Software Defined Networking

PhD Institution: University of Southern California (USC)

Employment History:
● 1993: University of Pittsburgh
● 2000: Hewlett-Packard Laboratories
● 2017: VMware
Srilatha (Bobbie) Manne, AMD

Bobbie is a Senior Fellow at AMD, working in the Research and Advanced Development team. She is a computer architect with over two decades of experience in industry in both research and product teams.

Research Area: Efficiency and sustainability
PhD Institution: University of Colorado, Boulder, 1999

Employment History:
● 1999: Compaq
● 2001: Intel
● 2007: AMD
● 2014: Cavium
● 2018: Microsoft
● 2021: Meta
● 2022: AMD
Parthasarathy (Partha) Ranganathan, Google

Parthasarathy (Partha) Ranganathan is currently a VP, technical Fellow at Google where he is the area technical lead for hardware and datacenters, designing systems at scale.

Research area: Systems architecture and energy efficiency: current focus on cloud server/systems infrastructure

Phd: Rice University, 2000

Employment History
- DEC/Compaq/HP: ~15 years
- Google: ~10 years
Q1: Please share what made you decide to pursue a career in industry
Q2: What differences do you see in project/career opportunities for PhD graduates in your organization relative to non-PhD graduates?
Driving Innovation in Academia and Industry
Keynote

Mark D. Hill
Microsoft (Azure) and U. Wisconsin (Emeritus)
Learn more about CRA-Industry here!

Join our blog mailing list here!
Thoughts, suggestions, and ideas for collaborations are always welcome!

Please reach out!

Vivek Sarkar- vsarkar@gatech.edu
Ben Zorn- ben.zorn@microsoft.com
Helen Wright- hwright@cra.org
Thank you for attending!

Please join us now for a reception outside in the Magnolia Patio.