

# Ken Kennedy Institute

**July 1, 2018 – December 31, 2019**

## **Annual Report**

**Lydia E. Kavradi**, Director (Sept. – Dec. 2019)

**Moshe Y. Vardi**, Past Director (July 2018 – Aug. 2019)

**Jan E. Odegard**, Executive Director

**Michelle Atkinson**, Program Administrator (Oct. – Dec. 2019)

**Victoria Langlais**, Past Associate Director (July 2018 – March 2019)

**Meredith Westover**, Administrative Assistant (Dec. 2019)

**Deborah Heath**, Past Marketing and Events Specialist (July 2018 – Aug. 2019)

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Anne and Charles Duncan Hall

1084-1085 Suite & 1088

5/8/20



**RICE** KEN KENNEDY  
INSTITUTE

## Executive Summary

2019 was another dynamic year for the Ken Kennedy Institute. Throughout the year, the Institute worked to develop collaborative efforts across Rice and the Houston computing, data science, and information technology community. This included organizing networking events such as conferences, workshops, and distinguished lectures; training and education (boot camps and tutorials); and supporting faculty engagements and proposal development. The Institute also worked closely with the Office of Information Technology, continuing to develop and improve Rice's research computing and data infrastructure. The Ken Kennedy Institute is constantly looking for opportunities "outside the box" – the next wave – to support the intellectual community of its 185 members, and offers many "stages" for engagement amongst faculty at Rice, across universities, and with industry. Between July 2018 – December 2019, we embarked on many endeavors to strengthen our organization that included:

- Hosted/co-Hosted (in support of community development):
  - Distinguished Lectures: 3 in Fall 2018 + 14 in 2019
  - Monthly member networking luncheons: 4 in Fall 2018 + 8 in 2019
  - Large number of 1-on-1 faculty engagements
  - Large number of industry discussions, one of which resulted in the Chevron Data Science Master degree
- Partnered with faculty and/or the Center for Research Computing (CRC) to prepare several major grant proposals:
  - 2019 NSF TRIPODS Data Science Phase I center proposal (not funded, PI is repurposing effort)
  - 2019 NSF STC Pre-proposal (not invited for full proposal, PI is repurposing effort)
  - 2019 NIH S10 High-End Instrumentation (HEI) Grant Program (resubmission of 2018 proposal that was scored borderline but not rejected)
    - Prepared and submitted JIT for 2018 NIH S10 HEI
    - Scored better on 2019 S10 resubmitted proposal and the 2019 S10 proposal is still in the NIH system
- Supported the Army Research Laboratory proposal that landed Rice a five-year, \$30 million cooperative agreement for research to enable advanced materials and next-generation networks.
- Hosted the 12<sup>th</sup> annual Rice Oil & Gas High Performance Computing Conference in March 2019 with:
  - 590 attendees
  - 32 paid industry sponsors
  - 8 national and international recognized invited speakers

- 20 talks in 4 parallel sessions
- 35 posters
- 4 workshops
- Hosted the 2<sup>nd</sup> annual Rice Data Science Conference in October 2018 with:
  - 380 attendees
  - 9 paid industry sponsors
  - 7 national and international recognized invited speakers
  - 22 talks in 4 parallel sessions
  - 40 posters
  - 2 workshops
- Hosted the 3<sup>rd</sup> annual Rice Data Science Conference in October 2019 with:
  - 345 attendees
  - 11 paid industry sponsors
  - 8 national and international recognized invited speakers
  - 24 talks in 4 parallel sessions
  - 51 posters
- Prepared and hosted two week-long boot camps open to external and internal participants in the summer 2019:
  - HPC Boot Camp (the 10<sup>th</sup> time), 15 participants
  - Data Science Boot Camp (the 7<sup>th</sup> time), 63 participants
- Continued awarding graduate fellowships by leveraging our industry networks. The Institute has awarded ~\$1.2M supporting 144 students since 2001:
  - Graduate Enhancement Fellowships: The Institute continued to administer our well-established and highly successful industry-funded program for students already at Rice.
    - In 2018: 12 named fellowships funded by industry partners, endowments, and the Oil & Gas HPC Conference
      - BP (2), ExxonMobil, Schlumberger, and Shell
      - Andrew Ladd Memorial Excellence in Computer Science and the Ken Kennedy-Cray endowments
      - Oil & Gas HPC Conference (5)
    - In 2019: 9 named fellowships funded by industry partners and endowments:
      - AMD, BP (2), ExxonMobil, Schlumberger, and Shell (2)

- Andrew Ladd Memorial Excellence in Computer Science and the Ken Kennedy-Cray endowments
  - Computational Science & Engineering Recruitment Fellowships: The Institute, using proceeds and sponsorship from the Rice annual Oil & Gas High Performance Computing Conference, continued to provide fellowships to recruit high-achieving students for graduate studies. The fellowships pay \$7,500 over 4 years and the department must provide 1-to-1 (or better) match.
    - In 2018: 22 superstars offered enhanced stipends, 6 elected to come to Rice
    - In 2019: 19 superstars offered enhanced stipends, 4 elected to come to Rice
- A first: supported 3-day entrepreneurship boot camp with IBB, SCI, and LILIE (LILIE responsible for program):
  - 10 participants (graduate students)
  - Funded and promoted by institutes, Brown School of Engineering, and NEWT.
- Enhanced the Institute's and Rice's visibility by leveraging our Facebook, LinkedIn, and Twitter profiles combined with targeted marketing, as well as printed materials for events.

## Institute Space and Leadership

The Ken Kennedy Institute is housed in Duncan Hall where it occupies three offices (the 1084-1085 office suite and office 1088). No other space is currently dedicated to or managed by the Institute.

Lydia E. Kavradi, Noah Harding Professor of Computer Science; Professor of Bioengineering, Electrical and Computer Engineering, and Mechanical Engineering (office housed within the CS department in Duncan Hall) became the Director of the Institute in September. She succeeded University Professor Moshe Y. Vardi, Karen Ostrum George Distinguished Service Professor in Computational Engineering, who directed the Ken Kennedy Institute since 2001 and is now establishing a campus wide initiative on Technology, Culture, and Society.

Jan E. Odegard joined the Institute in 2002 as the Executive Director, and has since March of 2015 also served, in a 20% capacity, as an Associate Vice President in the Office of Information Technology in charge of research computing.

The Institute is supported by two professional staff members: Michelle Atkinson, Program Administrator, who succeeded Victoria Langlais, Associate Director, and Meredith Westover, Administrative Assistant, who succeeded Deborah Heath, Marketing and Events Specialist.

## Institute Membership

The Ken Kennedy Institute's membership is comprised of 185 Rice faculty members and 55 associate members who are part of the greater campus population. In addition to these two communities, about 3,000 people subscribe to our mailing lists to receive information about events organized by the Institute.

## Internal Engagement and Community Building

From our roots in Computer Science, Electrical and Computer Engineering, Computational and Applied Mathematics, and Statistics, we have grown to encompass faculty from all the schools at Rice spanning engineering, natural sciences, business, humanities, music, and social sciences. The Ken Kennedy Institute is currently the virtual home of over 185 faculty members and senior researchers from across Rice University. Institute members receive most of their funding from federal agencies such as the National Science Foundation, the Defense Advanced Research Projects Agency, the Department of Energy's Office of Science, and the National Institutes of Health. In addition to these funding sources, we work closely with members to develop funding opportunities and partnerships with industry and private foundations.

### *Member Community Networking Luncheons*

- September 2018:
  - Reginald DesRoches, Dean of Engineering, "The Vision of Engineering at Rice and the Role of Computational and Data Science"
- October 2018:
  - Genevera Allen, Statistics, "The Rice Data to Knowledge (D2K) Lab"
- November 2018:
  - Pedram Hassanzadeh, Mechanical Engineering, "Harvey, wind farms, and heat waves: Using computer models and data to study environmental turbulence"
- December 2018:
  - Fred Oswald, Psychology, "AI in the Management of Organizations: Motivations, Measurement, Modeling, and Meaning"
- February 2019:
  - Marcia O'Malley, Mechanical Engineering, "The Need for Creativity and Diversity of Thought in the Digital Age"
- March 2019:
  - Edward Knightly, Electrical and Computer Engineering, "Scaling Wireless for the Next Generation Transformative Applications"
- April 2019:
  - Reinhard Heckel, Electrical and Computer Engineering, "Storing Information on DNA"
- May 2019:
  - Ang Chen, Computer Science, "In-Network Support for Eng-to-End Reliability"
- September 2019:
  - Chris Jermaine, Computer Science, "Data Science @ Rice"
- October 2019:

- Lydia Beaudrot, BioSciences, “Evaluating tropical wildlife globally with standardized in situ data” &
- Yingyan Lin, Electrical and Computer Engineering, “Bringing Powerful Machine-learning Systems into Daily-life Devices”
- November 2019:
  - Todd Treangen, Computer Science, “Identifying DNA sequences of concern”
- December 2019:
  - Lydia Kavraki, Computer Science, “The Ken Kennedy Institute: Moving Forward” &
  - Meng Li, Statistics, “Trustworthy and Scalable Data Science via Statistical Learning”

### *Shared Computing Infrastructure*

Since 2002, the Ken Kennedy Institute has successfully worked with faculty to fund and build Rice’s shared cyberinfrastructure. Today, the Institute, in partnership with Rice’s Office of Information Technology, supports the computational research needs of more than 190 faculty members and over 800 users. In any given month, 250 of these users consume significant computing and storage resources.

The Institute could not operate and continue to build upon its shared computing infrastructure without the technical support of Rice’s Office of Information Technology, the financial support of Rice University, funding from the National Science Foundation (NSF), the National Institute of Health (NIH), and support by industry partners. While we continue partnering to write infrastructure grant proposals, the competition is becoming increasingly tough with less government funding available. Since 2002, the Institute has helped fund, on average, \$1 million per year of research computing infrastructure at Rice. This has helped Rice sustain a healthy computational infrastructure, serving as a catalyst for research and maintaining Rice’s ability to be competitive for research funding.

### *Proposal Development and Support*

The Ken Kennedy Institute assisted in writing, coordinating, and submitting the following major grant proposals:

- 2019 NSF TRIPODS Data Science Phase I center proposal; PI: Chris Jermaine (not funded, PI is repurposing effort)
- 2019 NSF STC Pre-proposal; PI: Moshe Vardi (not invited for full proposal, PI is repurposing effort)
- 2019 NIH S10 High-End Instrumentation (HEI) Grant Program; PI: Lydia Kavraki (resubmission of 2018 proposal that was scored borderline but not rejected)
  - Prepared and submitted JIT for 2018 NIH S10 HEI
  - Scored better on 2019 S10 resubmitted proposal and the 2019 S10 proposal is still in the NIH system
- Army Research Laboratory proposal that landed Rice a five-year, \$30 million cooperative agreement for research to enable advanced materials and next-generation networks.

### *Research Computing Service Center Operation*

The Ken Kennedy Institute continued operational responsibility for the service center for shared high-performance computing infrastructure at Rice. Operation of the service center will be transitioned to OIT during the spring of 2020, and will not be operated by the Ken Kennedy Institute moving forward. However, while the Ken Kennedy Institute will not operate the service center, the Institute will continue to represent and support faculty interest in research computing infrastructure and provide leadership for future needs.

### *Master of Computational Science and Engineering Degree Program*

The Professional Master Program is a joint program between Computer Science, Computational and Applied Mathematics, Electrical and Computer Engineering, and Statistics. The Ken Kennedy Institute Executive Director served as the Director of the program.

## **External Engagement**

The Ken Kennedy Institute continues to engage with and support the local community at Rice and in Houston with a variety of educational conferences, workshops, and boot camps, public distinguished lectures, and monthly networking opportunities. The Institute's power lies in its ability to build and strengthen relationships at the forefront of intellectual ambitions. Critical to its mission is the Institute's efforts to continue building and maintaining strong relationships across the community at Rice, the Texas Medical Center, and the greater Houston area.

### *2019 Rice Oil and Gas High Performance Computing Conference (March 4-6, 2019)*

Technology in the Oil & Gas industry is rapidly evolving, allowing ambitious companies to respond more quickly and efficiently to increasing demands. Companies are evaluating their own technological advances and determining their future computing needs. In response to this trend the theme of the 12<sup>th</sup> annual Rice Oil & Gas HPC Conference, organized by the Ken Kennedy Institute, was meeting the computing-capacity demand in the energy industry for the next decade. The two and half-day conference included four pre- and post-conference workshop sessions, three keynotes, five plenary talks, one (early career) panel, 20 papers (selected from over 50 submitted abstracts) in four parallel sessions, and 35 student poster presentations. The annual conference drew a record 590 attendees, up from 500 in 2018 and 70 more than the previous record for 2015. The Rice O&G HPC Conference continues to be widely recognized as THE event for networking and collaboration, and is today probably the 4<sup>th</sup> or 5<sup>th</sup> largest HPC conference worldwide. This conference is unique in providing an industry focus and provides a platform for practitioners in the industry to connect with peers, technology providers, and academia on topics relevant to the industry. To see the full program, visit <http://rice2019oghpc.rice.edu/program/>.

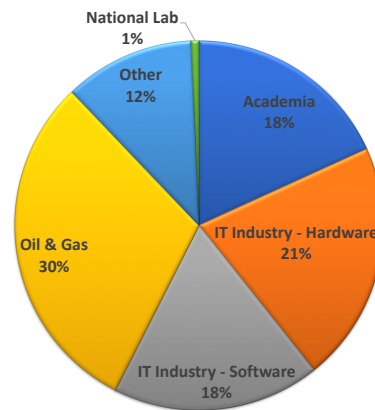
The Rice Oil & Gas HPC conference continues to demonstrate the value we bring to external communities and promotes Rice's leadership role in this space. With attendance close to 600, we are maintaining our role as a leader in the HPC and computational science and engineering space. We are a valued partner with a proven commitment to support the needs of the energy industry ecosystem. As a result, we continue to receive strong support

from the IT industry with 34 sponsors present (the who's-who across the HPC IT hardware and software industry), including two young startups that joined the new launch-pad sponsor area. The attendee demographic breakdown was in line with past years with 30% of attendees coming from the energy segment, which is critical for the continued relevance of the conference.

The conference's gross (registration plus sponsorship) was approximately \$214,000. After covering operational costs, funds will be used to support the Computational Science & Engineering (CS&E) Graduate Recruiting Fellowship program. This fellowship program is designed to support the recruitment of outstanding graduate students in computational science and engineering and HPC to Rice University.

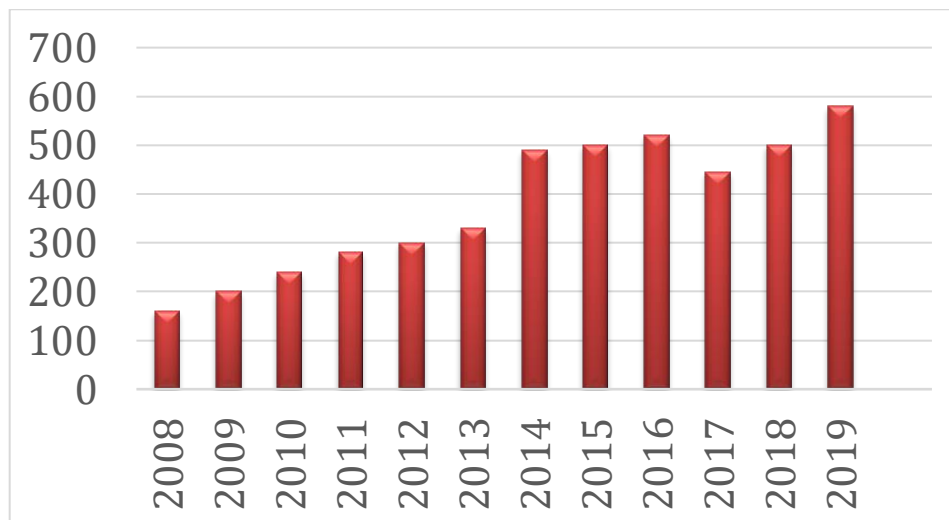
The Institute looks forward to the continued success of the conference with plans to host the 13<sup>th</sup> annual conference on March 2-4, 2020.

### 2019 Rice OG-HPC Conference Registration by Industry



\* self classified

### 2008-19 Rice OG-HPC Conference Attendance History





### ***2018 Rice Data Science Conference (October 8-9, 2018)***

The second annual Rice Data Science Conference was held at Rice University October 8 & 9, 2018. The Rice Data Science Conference Committee saw an overwhelming number of abstract submissions, on subjects ranging from the fundamentals of data science to applications that span the spectrum of the Houston and Texas-wide industry ecosystem. The broad set of submissions reflects the importance that the Houston community assigns to the opportunities that they see in this area.

The 2018 program was designed to spark opportunistic collaboration and networking. It featured seven distinguished plenary speakers, with opportunities to engage them at breaks and meals. The technical program included 22 total talks in four parallel tracks.

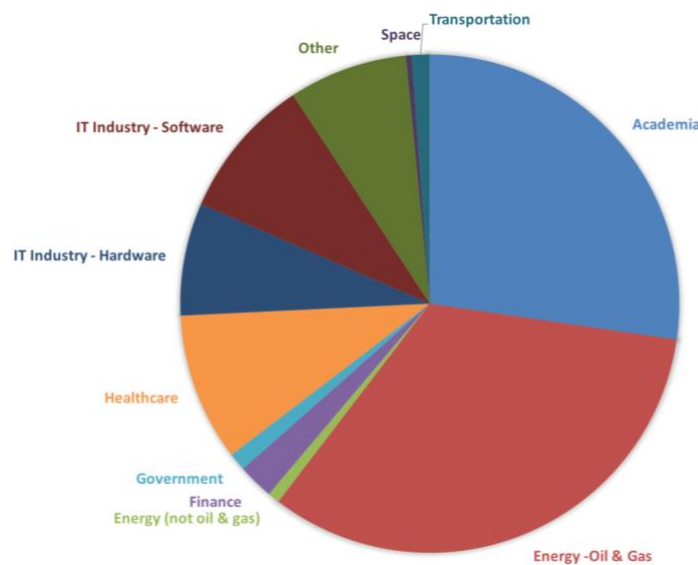
Additionally, the conference featured two pre-conference workshops and the presentation of 40 student posters.

To see the full program, visit <http://2018ricedsconference.rice.edu/program/>.

The planning committee was extremely pleased with both the number and diversity of attendees. Over 400 people registered for the conference and 380 picked up their name-badge. In addition to the event being so well attended, we had nine industry sponsors sign up, demonstrating the commercial interest for supporting community building and engagement around data science.

With its Data Science Initiative, Rice has doubled-down on its commitment to increase both the quantity and quality of data-driven knowledge-discovery at Rice and beyond. Since its inception in Summer of 2015, the Rice Data Science Initiative has brought eight new faculty members to Rice and has spurred new opportunities, including the newly formed Rice Data to Knowledge Lab. The Ken Kennedy Institute is proud to participate in one of the many ways that Rice University is advancing the field and knowledge of Data Science.

### **2018 Rice Data Science Conference Registration by Industry**



### ***2019 Rice Data Science Conference (October 14-15, 2019)***

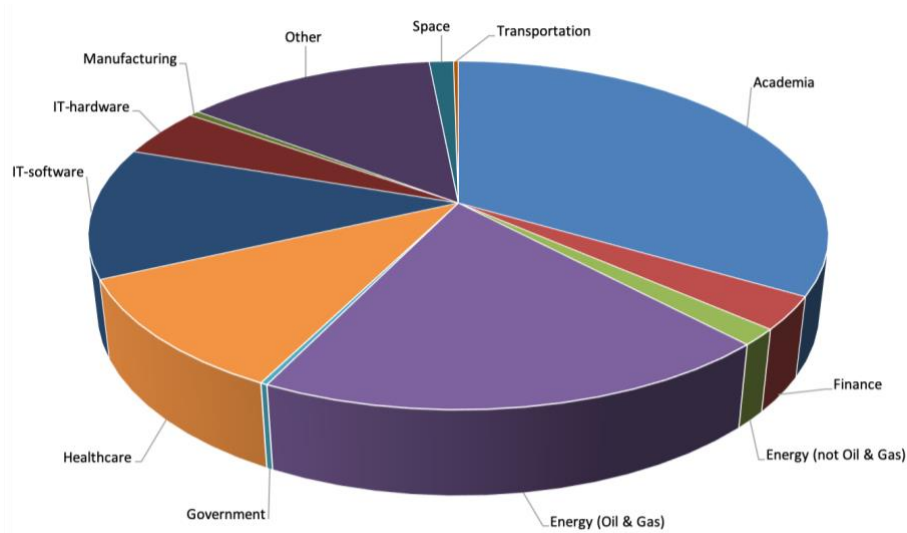
The third annual Rice Data Science Conference, organized by the Ken Kennedy Institute, was held at Rice University October 14-15, 2019. In 2019, the committee of the Rice Data Science Conference saw a record number of abstract submissions on subjects ranging from methods and algorithms for data science to applications that span health, energy, and public good. The volume and variety of submissions reflects the importance the Houston community assigns to this area.

The program was designed to spark opportunistic collaboration and networking. It featured seven distinguished keynote/plenary speakers and a tag-team plenary from the Data to Knowledge Lab, delivered by its Director and one of the students that participated in the program. The technical program included four parallel tracks, each featuring 6 talks. The conference included 51 student posters presented during the engaging Poster Session and Networking event at the end of the second day. Additionally, the conference program offered plenty of opportunities for networking with fellow attendees and sponsors during the gala at the end of the first day, as well as during the breakfast, breaks, and lunch.

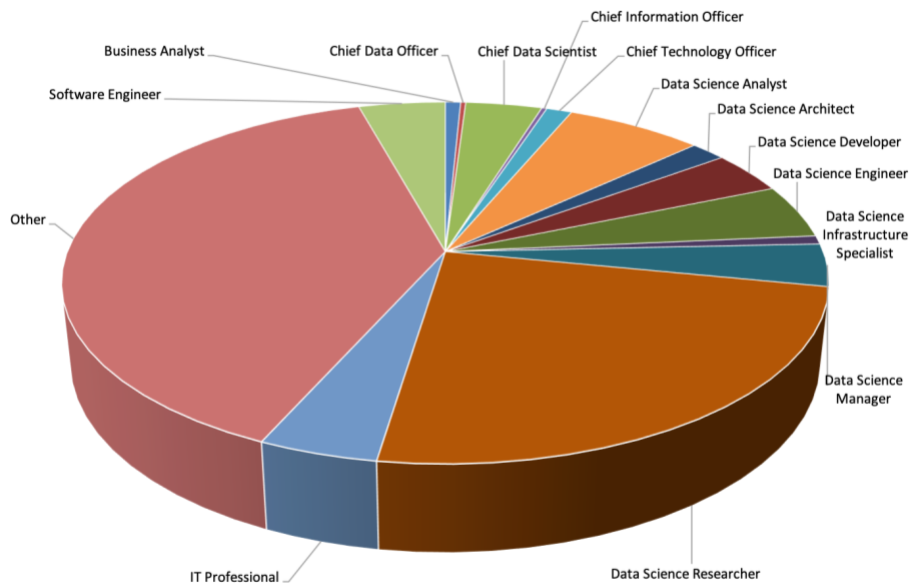
The organizers were extremely pleased with both the number and diversity of attendees. 405 registered for the conference and 345 picked up their name badge. In addition to the event being so well attended, we had 11 industry sponsors and three ecosystem partners demonstrating the interest for supporting community building and engagement around data science. To see the full program, visit <http://2019ricedsconference.rice.edu/program/>.

The Ken Kennedy Institute looks forward to hosting the 4<sup>th</sup> annual Rice Data Science Conference October 26-27, 2020.

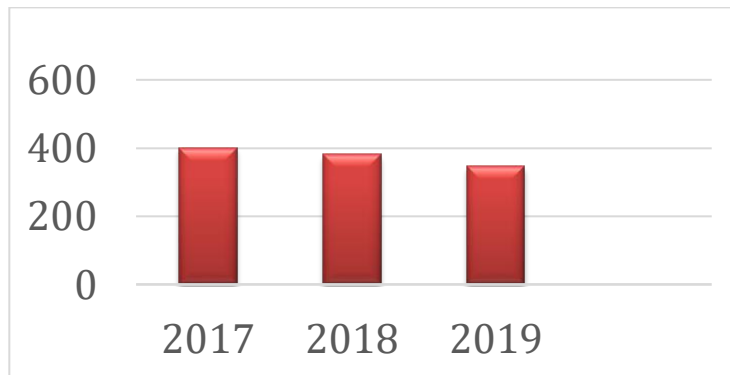
### **2019 Rice Data Science Conference Registration by Industry**



## 2019 Rice Data Science Conference Registration by Role



## 2017-19 Rice Data Science Conference Attendance History



### *HPC Boot Camp (June 10-14, 2019)*

The 10<sup>th</sup> Annual HPC Boot Camp hosted by the Ken Kennedy Institute addressed continued training and education in the “art” of high-performance computing and scientific programming. While the main driver for the HPC Boot Camp has been participation from the oil and gas industry, the curriculum is broadly applicable to any field engaged in scientific computing where there is a need to harness more of the computing power offered by modern servers and clusters. This year 15 participants completed the five-day HPC Boot Camp course. While participants from industry paid full cost to attend the course, the Ken Kennedy Institute heavily subsidized participation from Rice, TMC, and the Gulf Coast Consortia.

#### Instructors:

- Max Grossman, Research Scientist, Computer Science
- John Mellor-Crummey, Professor, Computer Science

### *Data Science Boot Camp (August 12-16, 2019)*

The 7<sup>th</sup> annual Data Science Boot Camp was hosted at the BioScience Research Collaborative building. Again this year the Data Science Boot Camp was offered as a five-day training program. The program was designed to attract attendees that needed the skills required to start leveraging the latest data analytics methods and tools with their data. The 63 participants that completed the program were from companies such as: Chevron, ConocoPhillips, ExxonMobil, S.J.P. Morgan Chase & Co, and Shell. Several Rice University and Texas Medical Center students and staff members also completed the course. While participants from industry paid full cost to attend the course, the Ken Kennedy Institute heavily subsidized participation for academic affiliation.

Instructors:

- Chris Jermaine, Professor, Computer Science
- Devika Subramanian, Professor, Computer Science
- Natalie Berestovsky, Occidental Petroleum

### *Distinguished Lectures (lectures open to the public)*

The Ken Kennedy Institute hosts several lecture series throughout the academic year. These lectures are given by well-known speakers that are invited to present talks that allow for discussion, networking, and an opportunity to hear from top executives and leaders from around the globe.

- September 25, 2018: **Dana DeBeauvoir**, Travis County Clerk; **Joseph Hall**, Ph.D., Chief Technologist and Director of the Internet Architecture Project, Center for Democracy & Technology; and **Dan Wallach**, Ph.D., Baker Institute Rice Faculty Scholar and Professor of Computer Science and of Electrical and Computer Engineering, Rice University
  - “Election Integrity 2018: What Could go Wrong”
- October 3, 2018: **Yan-David Erlich**, Serial entrepreneur, Active early-stage investor
  - “Recipe for a Vibrant Entrepreneurial Ecosystem”
- November 8, 2018: **Jesus Labarta**, Director of the Computer Science Department at the Barcelona Supercomputing Center (BSC), Professor of Computer Architecture at the Polytechnic University of Catalonia
  - “The Real Revolution ... From the Latency to the Throughput Age”
- January 14, 2019: **Andrew A. Chien**, William Eckhardt Professor of Computer Science at the University of Chicago and senior scientist of mathematics and computer science at Argonne National Laboratory
  - “Zero-Carbon Cloud: Reducing the Cloud’s Growing Carbon Footprint and Enabling High-Renewable Power Grids”
- January 16, 2019: Dr. **William Dally**, Chief Scientist and Senior Vice President of Research at NVIDIA Corporation and professor and former Chair of Computer Scientist at Stanford University
  - “The Future of Computing: Domain-Specific Accelerators”
- January 22, 2019: **Moshe Y. Vardi**, University Professor, Karen Ostrum George Distinguished Service Professor in Computational Engineering, Professor of Computer Science, and Director of the Ken Kennedy Institute at Rice University

- “An Ethical Crisis in Computing”
- February 4, 2019: **Maurice Herlihy**, An Wang Professor of Computer Science, Brown University
  - “Blockchains and the Future of Distributed Computing”
- February 11, 2019: **Stuart Feldman**, Chief Scientist, Schmidt Futures
  - “AI and Its Promise for Scientific Research”
- February 19, 2019: **Srinath Madasu**, Technical Advisor, Halliburton
  - “System of Systems (SOS) Hybrid Physics-based Data Driver Multi-Scale Modeling and Optimization”
- April 11, 2019: Experts, Urban Mobility Transportation Panel
  - “The Future of Urban Mobility”
- April 16, 2019: **Lea Kissner**, Chief Privacy Officer of Humu
  - “Building for Trust: Because We Don’t All Have to Learn Privacy Lessons the Hard Way”
- April 25, 2019: **Ramesh Gopinath**, Ph.D., Vice President, IBM Blockchain Solutions
  - “Transforming Supply Chains with Blockchain”
- September 10, 2019: **Walter Loewenstern**, Co-Founder of the ROLM Corporation
  - “Starting Up Silicon Valley: How ROLM Became a Cultural Icon and Fortune 500 Company”
- September 24, 2019: **Vinay Pai**, SVP of Bill.com
  - “How Fintech, Crypto, & Blockchain are Transforming Commerce”
- October 2, 2019: **Sarita Adve**, Richard T. Cheng Professor of Computer Science at the University of Illinois at Urbana-Champaign
  - “Memory Consistency Models: They Are Broken and Why We Should Care”
- October 24, 2019: **Manuela M. Veloso**, Managing Director and Head, J.P.Morgan AI Research, and Herbert A. Simon University Professor, Carnegie Mellon University (on leave)
  - “AI for Intelligent Financial Services: Examples and Discussion”
- November 5, 2019: **Farnam Jahanian**, President of Carnegie Mellon University
  - “The Future of Higher Education in the Age of Disruption”

### *Houston Exponential Data Science Sub-Committee*

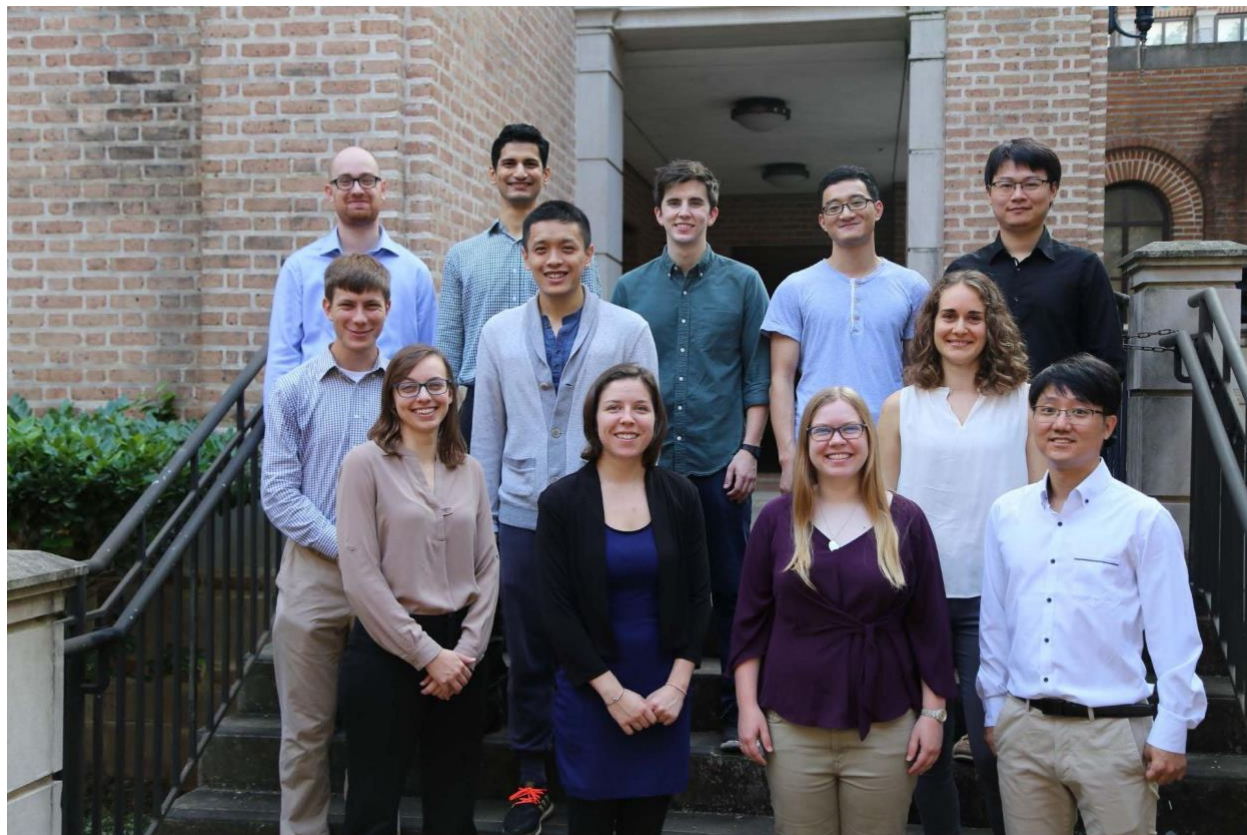
Jan Odegard continued participating on the Data Science sub-committee coordinated by the Houston Exponential (HX). This is one of four sub-committees with Ken Kennedy Institute members on them. The other three are Internet of Things, Cybersecurity (Dan Wallach), and Robotics (Marcia O'Malley and Lydia Kavraki).



## Graduate Student Excellence and Education

With the support of industry and the Oil & Gas HPC Conference, the Ken Kennedy Institute has awarded nearly \$1.2 million to 144 students since 2001.

### *Graduate Fellowships (\$87,500 Awarded in 2018)*



Back from left to right: Christopher Thiele, Manav Bhati, Jordan Shivers, Wenya Shu, Yicheng Wu;  
Second row from left to right: Philip Taffet, Ao Cai, Eleni Litsa;  
Front row from left to right: Alana Semple, Mae Markowski, Carly Fagnant, Jaeho Lee

The Ken Kennedy Institute awarded 12 supplemental graduate fellowships in 2018 to students across Chemical & Biomolecular Engineering (ChBE), Civil & Environmental Engineering, Computational & Applied Mathematics (CAAM), Computer Science (CS), Earth, Environmental, and Planetary Sciences, Electrical & Computer Engineering (ECE)/Applied Physics, and Statistics.

The graduate fellowships are made possible by the sponsorships received from the energy industry (BP x2, ExxonMobil, Schlumberger, and Shell), from the Andrew Ladd Memorial Excellence in Computer Science and the Ken Kennedy-Cray endowments, and from the Oil & Gas HPC Conference.

### *Graduate Fellowships (\$65,000 Awarded in 2019)*



Top row from left to right: Randall Balestrieri, Ao Cai, Mae Markowski, Nidish Narayanaa Balaji, Afsaneh Rahbar;  
Bottom row from left to right: Thomas Roddenberry, Christina Taylor, Keren Zhou, Ye Emma Zohner

The Ken Kennedy Institute awarded nine supplemental graduate fellowships in 2019 to students across Computational & Applied Mathematics (CAAM), Computer Science (CS), Earth, Environmental, and Planetary Sciences, Electrical & Computer Engineering (ECE), Mechanical Engineering, and Statistics.

The graduate fellowships are made possible by the sponsorships received from AMD, BP (2), ExxonMobil, Schlumberger, and Shell (2) as well as from the Andrew Ladd Memorial Excellence in Computer Science and the Ken Kennedy-Cray endowments.

#### ***Ken Kennedy Institute Computational Science & Engineering (Recruiting) Fellowships***

The Institute continued to expand its Recruiting Fellowship program by offering four-year “supplemental fellowships” each in the amount of \$7,500 to CAAM, CS, ECE, and Statistics. The fellowship requires each department match a minimum of an equal amount for a total award of at least \$15,000 per student over four years. These fellowships can only be used to help recruit “superstar” graduate students to Rice. These fellowships are made possible by funding from the Rice OG-HPC Conference.

In 2018, the Ken Kennedy Institute made 22 CS&E offers to applicants. Of these 22 offers, 6 students accepted. The Institute welcomed these exceptional students to Rice in the Fall 2018.

In 2019, the Ken Kennedy Institute made 19 CS&E offers to applicants. Of these 19 offers, 4 students accepted. The Institute welcomed these exceptional students to Rice in the Fall of 2019.