

VINEET PANDEY

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My research advances the design of social computing systems by integrating learning and collaboration to enable complex work such as generating and evaluating scientific theories. My research systems have been deployed with the American Gut Project (world's largest crowdfunded citizen science project), Open Humans, and other communities. Over 600 people from 30 countries have self-organized to generate theories about the human microbiome and test them by running experiments.

Here's a short **KPBS** radio interview about my research.

EDUCATION

UC San Diego, CA
2019

Ph.D. Candidate, Computer Science & Engineering
Title: Gut Instinct: Creating Scientific Theories with Online Communities
Advisor: Scott Klemmer
Committee members: Don Norman, Jim Hollan, Rob Knight, Laurel Riek

BITS Pilani, India
2011

Bachelor of Engineering (Honors), Computer Science

PUBLICATIONS

Google H-Index: 4. In HCI, student authors are generally listed first; supervising faculty generally listed last. The premier HCI publication venues are the annual ACM CHI, UIST, & CSCW conferences.

- 1 **Galileo: Scaling Citizen-led Experimentation with a Procedural Training Platform**
Vineet Pandey, Tushar Koul, Chen Yang, Daniel McDonald, Rob Knight, Scott Klemmer · *In Submission*
- 2 **Docent: Transforming Personal Intuitions to Scientific Hypotheses through Content Learning and Process Training**
Vineet Pandey, Justine Debelius, Embriette Hyde, Tomasz Kosciolk, Rob Knight, Scott Klemmer · *Learning@Scale 2018*
- 3 **Gut Instinct: Creating Scientific Theories with Online Learners**
Vineet Pandey, Amnon Amir, Justine Debelius, Embriette Hyde, Tomasz Kosciolk, Rob Knight, Scott Klemmer · *CHI 2017*
- 4 **Framing Feedback: Choosing Review Environment Features that Support High Quality Peer Assessment**
Catherine Hicks, Vineet Pandey, Ailie Fraser, Scott Klemmer · *CHI 2016*
Taught at CMU (*Designing large-scale (peer) learning systems*) and Northwestern (*Peer Grading*)
- 5 **Concerto: A High Concurrency Key-Value Store with Integrity**
Arvind Arasu, Ken Eguro, Raghav Kaushik, Donald Kossmann, Pingfan Meng, Vineet Pandey, Ravi R. · *SIGMOD 2017*
- 6 **An HCI View of Configuration Problems**
Tianyin Xu, Vineet Pandey, Scott Klemmer · *arXiv*
- 7 **Integer Representations towards Efficient Counting in the Bit Probe Model** Gerth S. Brodal, Mark Greve, Vineet Pandey, S. Srinivasa Rao. *Journal of Discrete Algorithms 2014, TAMC 11*

EXTENDED ABSTRACTS

- 1 **Citizen Microbiology: Moving beyond crowdsourcing to active, participatory science by the public** · V. Pandey, S. Klemmer, D. McDonald, R. Knight · *American Society of Microbiology 2019*
- 2 **Gut Instinct: Creating Scientific Theories with Online Communities** · V. Pandey · *CSCW Doctoral Consortium 2018*
- 3 **Transitioning the American Gut Project to the Microsetta Initiative** · D. McDonald, A. Aksenov, A. Melnik, P. Dorrestein, L. Smarr, R. Sinha, V. Pandey, S. Klemmer, R. Knight · *American Society of Microbiology 2018*

- 4 **Integrating Citizen Science with Online Learning to Ask Better Questions** · V. Pandey, S. Klemmer, Amnon Amir, Justine Debelius, E. Hyde, Tomasz Kosciolk, R. Knight · *HCOMP 2016*
- 5 **Education Across Borders: Technology Supported Mentoring and Teambuilding.** · V. Pandey · *HCI Across Borders, CHI 2016 Workshop*
- 6 **Game-Theoretic Models Identify Useful Principles for Peer Collaboration in Online Learning Platforms** · V. Pandey, K. Chatterjee · *CSCW 2016*
- 7 **Connecting Stories and Pedagogy Increases Participant Engagement in Discussions** · V. Pandey, Y. Kotturi, C. Kulkarni, M. Bernstein, S. Klemmer · *Learning@Scale 2015*
- 8 **Analysis of Tree Indexing Structures for Flash Memory** · SeungBum Jo, Vineet Pandey, S. Srinivasa Rao · *Student Symposium, 18th International Conference on High Performance Computing, 2011*

RESEARCH POSITIONS

Design Lab, UC San Diego

Graduate Student, Advisor: Scott Klemmer

Oct 2014 - present

- Designed and evaluated social computing systems for people to perform personally meaningful scientific work by creating hypotheses and designing & running experiments. 19% of hypotheses had novel insights for microbiome researchers. In Collaboration with Rob Knight & American Gut Project.

Institute of Science and Technology, Austria

Visiting Student w/Krish Chatterjee

Summer 2015

- Created an evolutionary game-theoretic model to explain how quantity of peer feedback in online classes varies with value and cost of feedback

Database group, Microsoft Research, Redmond

Summer Intern w/Arvind Arasu

Summer 2014

- Developed a high-performance data-structure for integrity checks in database query processing

Advanced Technology Group, NetApp, Bangalore

Research Staff

July 11 - May 13

- Designed a future vaulting system prototype in a clustered OS & implemented network communication
- Reduced recovery time for a datacenter node failure by 60% w/ instantaneous metadata replication
- 20%-time project towards combining deduplication and encryption techniques for cloud storage
- One patent & two in-house research papers

Seoul National University, South Korea

Undergraduate Thesis w/Srinivasa Rao Satti

2011

- Developed theoretical bounds on the performance claims of flash memory data structures
- Represented integers in close to optimal number of bits to support increment-like operations

TALKS & DEMOS

Academic

- Stanford HCI, Nov 2018
- CSCW Doctoral Consortium, Nov 2018
- Precision Medicine Initiative, Scripps Research Translational Institute, La Jolla, CA, Oct 2018
- Learning@Scale, London, June 2018
- *MIT Teaching Systems Lab*, Apr 2018
- *MIT Innovation Lab*, Apr 2018
- *South Asia Initiative, UC San Diego*, March 2018
- *CHI*, Denver, CO, May 2017
- *CSE Visit Day*, UC San Diego 2017, 2018

Community outreach

- Citizen Science Association, Raleigh, NC. March 2019
- MyLymeData, San Ramon, CA, Apr 2018
- Research Expo UC San Diego, 2016, 2017, 2018
- Nerd Nite, San Diego, August 2018
- Maker Faire, San Diego, 2017
- Digestive Disease Week, Chicago, 2017
- Health Data Exploration 2017, UC San Diego. **First Prize** in Posters category
- Beer and cheese communities: San Diefuego, QUAFF, San Diego, 2018

PATENTS

- **Controlling Verification of Key-Value Stores.** Arvind Arasu, Ken Eguro, Raghav Kaushik, Donald Kossmann, Pingfan Meng, Vineet Pandey, Ravi R. (Microsoft Research). 2018.
- **System and Method for Efficiently Migrating Data from Legacy Storage Systems to Newer Object Based Storage Systems.** Vineet Pandey, Chhavi Sharma, Ranjit Kumar, Kaladhar Voruganti, Parag Deshmukh (NetApp). Submitted 2015.

TEACHING, MENTORING, & SERVICE

Teaching Assistant, *CSE 216: Research in Human-Computer Interaction Design*

Curated course reading list, mentored thirteen student projects, taught a lecture

Teaching Assistant, *CSE 170: Human-Computer Interaction Design*

I was the tech lead TA, and ran two 15-person sections. Sections followed a flipped model of instruction where I mentored students projects. Steps included needfinding, making paper prototypes, running user studies, building the app, running experiments, and sharing results

Teaching Assistant, *DSGN 1: Introduction to Design*

Flipped model where students read relevant portions of Design of Everyday Things; I mentored student projects in classroom and office hours

Teaching Assistant, *CSE 151: Undergraduate Machine Learning*

Created problem sets, taught extra hour lessons, clarified students' questions

Mentor, *2 graduate students, 11 undergraduates, and 1 high school student*

Students worked with me to design, program, and learn how to present research. For each, this was their first HCI research experience. Two are pursuing graduate degrees, six are completing studies at UC, and five who graduated work at technology companies such as Google, TaskRabbit, and PlanGrid.

PhD Sam Lau, UCSD Cognitive Science

MS Tushar Koul → TaskRabbit

BS

Liby Lee → Coursera → U.Penn. CS PhD

Rachel Chen → MS (HCI) Georgia Tech

Aliyah Clayton, Cypress College → UC Irvine BS

Chen Yang → GoDaddy → Google

Cody Doan → Viasat

Brian Soe → GE Digital → PlanGrid

Crystal Kwok → Bluebeam

Dingmei Gu (at UCSD)

Hedy Wang (at UCSD)

Orr Toledano (at UCSD)

Kaung Yang (at UCSD)

High school Robert Goebel

Reviewer: CSCW, CHI (2017, 2018); DIS 2019

Human-Computer Interaction Area Lead for CSE Visit Day 2015 at UC San Diego

Scientific Advisor for ColonyB - a Game with a Purpose to cluster microbiome data
President of Association of Indian Graduate Students at UC San Diego (2015-2016)

HONORS

- 2012: Honorable Mention in *Innovation* and *Teamwork* categories at NetApp CTO Innovation awards
- 2006: Selected for Bachelors in Statistics, Indian Statistical Institute (*30 students across India*)
- 2005: Qualified for Indian National Olympiad in Informatics (*Top 1.5% of 50000*)
- 2004: National Talent Search Scholar (*Top 1% of 100000*)
- 2004-2006: All India Ranks *4, 6, and 9*, National Cyber Olympiads

UNDERGRADUATE RESEARCH EXPERIENCE

Participant , Microsoft Research Summer School Talks and activities about using technology to solve socio-economic problems	<i>Summer 2010</i>
Summer Intern , Chinese University of Hong Kong Constructing convolutional multicast codes for any arbitrary network with cycles	<i>Summer 2009</i> <i>Networks Theory</i>
Research Intern , Indian Statistical Institute, Kolkata Finding nearby devices without exchanging exact locations	<i>Jan-April 2009</i> <i>Security, Privacy</i>
Trainee , Vikram Sarabhai Space Centre, Trivandrum Prototype design of crew health monitoring system	<i>Summer 2008</i> <i>Circuit Design</i>

REFERENCES

- 1 **Scott Klemmer** *srk@ucsd.edu*
Professor, Cognitive Science & Computer Science and Engineering
UC San Diego
- 2 **Don Norman** *dnorman@ucsd.edu*
Director, The Design Lab
Professor Emeritus of Psychology, Cognitive Science, & Electrical and Computer Engineering
UC San Diego
- 3 **Jim Hollan** *hollan@ucsd.edu*
Distinguished Professor of Cognitive Science & Professor of Computer Science and Engineering
UC San Diego
- 4 **Rob Knight** *robknight@ucsd.edu*
Professor, Department of Pediatrics & Computer Science and Engineering
UC San Diego