Vineet Pandey

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Summary: 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.

Education

UC San Diego, CA Ph.D. Candidate, Computer Science & Engineering
2019 *Gut Instinct: Creating Scientific Theories with Online Learners*
Advisor: Scott Klemmer

BITS Pilani, India Bachelor of Engineering (Honors), Computer Science
2011

Publications

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 Kosciolek, 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 Kosciolek, Rob Knight, Scott Klemmer · *CHI 2017*
5. **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*)
4. **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*
3. **Integrating Citizen Science with Online Learning to Ask Better Questions** · **V. Pandey**, S. Klemmer, Amnon Amir, Justine Debelius, E. Hyde, Tomasz Kosciolek, R. Knight · *HCOMP 2016*
4. **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 and Demos

Academic
· Stanford HCI, Nov 2018
· CSCW Doctoral Consortium, Nov 2018
· Precision Medicine@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 Ramone, 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 Difuego, 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*
I curated the course reading lists, mentored thirteen student projects, and 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, run-ning user studies, building the app, running experiments, and sharing results.

Teaching Assistant, *DSGN 1: Introduction to Design*
Classes followed a flipped model of instruction 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*
I created problem sets, taught extra hour lessons, and clarified students' questions.

Mentoring, *2 graduate students, 10 undergraduates, and 1 high school student*
Students worked with me to design, program, and learn how to present their research. For all the students, this was their first HCI research experience. Many have gone on to put their skills to use at companies; others are applying to graduate school.

· Tushar Koul, Now at TaskRabbit
· Chen Yang, Now at GoDaddy
· Liby Lee, Intern at Coursera, now applying for graduate school

Reviewer: CSCW, CHI 2017, 2018

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

Honors & Responsibilities

· 2013-14: CSE department fellowship [Awarded to all incoming CSE PhD students]
· 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
· 2015-2016: President of Association of Indian Graduate Students at UC San Diego

Undergraduate Research Experience

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

REFERENCES

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