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 NPR interview about my research: http://bit.ly/npr-ucsd-gut-instinct

EDUCATION

Harvard University
Nov 2019-
Postdoctoral Fellow, Intelligent and Interactive Systems Group
Fellow, Center for Research on Computation and Society
Mentor: Krzysztof Gajos

UC San Diego
2019
Ph.D. Candidate, Computer Science & Engineering
Thesis: *Gut Instinct: Creating Scientific Theories with Online Communities*
Advisor: Scott Klemmer
Committee members: Don Norman, Jim Hollan, Rob Knight, Laurel Riek
2019 Jacobs School of Engineering Henry Booker Award for Exemplary Ethical Engineering

BITS Pilani, India
2011
Bachelor of Engineering (Honors), Computer Science
Thesis: *Integer Representations towards Efficient Counting in the Bit Probe Model*
Mentor: Srinivasa S. Rao (Seoul National University)

PUBLICATIONS

Google H-Index: 6. 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: Roles and Procedural Support in a Social Computing System for Citizen Experimentation** Vineet Pandey, Tushar Koul, Chen Yang, Daniel McDonald, Rob Knight, Scott Klemmer *Under Review*

Taught at USC (*CSCI 499: Computing for Social Good*)

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 · *ACM 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 · *ACM CHI 2017*

4 **Framing Feedback: Choosing Review Environment Features that Support High Quality Peer Assessment**
Catherine Hicks, Vineet Pandey, Ailie Fraser, Scott Klemmer · *ACM CHI 2016*

Taught at CMU (*05-499A / 05-899A: Designing large-scale (peer) learning systems*) and Northwestern (*EECS 497: 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. · *ACM 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** · **Vineet Pandey**, Scott Klemmer, Daniel McDonald, Rob Knight · *American Society of Microbiology 2019*

2 **Improving Health Outcomes by Integrating Personal Knowledge, Community, and Data** · **Vineet Pandey** · *ACM CHI 2019 Workshop: Body As Starting Point*

3 **Reconstruction Reduces Fixation on Surface Details of Explanations** · Sam Lau, Tricia Ngoon, **Vineet Pandey**, Scott Klemmer · *ACM Creativity and Cognition 2019*

4 **Gut Instinct: Creating Scientific Theories with Online Communities** · **Vineet Pandey** · *CSCW Doctoral Consortium 2018*

5 **Transitioning the American Gut Project to the Microsetta Initiative** · Daniel McDonald, Alexander Aksenov, Alexey Melnik, Pieter Dorrestein, Larry Smarr, Rashmi Sinha, **Vineet Pandey**, Scott Klemmer, Rob Knight · *American Society of Microbiology 2018*

6 **Integrating Citizen Science with Online Learning to Ask Better Questions** · **Vineet Pandey**, Scott Klemmer, Amnon Amir, Justine Debelius, Embriette Hyde, Tomasz Kosciolek, Rob Knight · *HCOMP 2016*

7 **Game-Theoretic Models Identify Useful Principles for Peer Collaboration in Online Learning Platforms** · **Vineet Pandey**, Krishnendu Chatterjee · *CSCW 2016*

8 **Education Across Borders: Technology Supported Mentoring and Teambuilding.** · **Vineet Pandey** · *HCI Across Borders, CHI 2016 Workshop*

10 **Connecting Stories and Pedagogy Increases Participant Engagement in Discussions** · **Vineet Pandey**, Y. Kotturi, C. Kulkarni, M. Bernstein, S. Klemmer · *Learning@Scale 2015*

11 **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 contained novel insights for microbiome researchers. Multiple communities fleshed out their hypotheses to expeirmental designs and ran experiments with global participants.

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

· American Society of Microbiology, SF, CA. 2019
· USC, Computing for Social Good, LA, CA. 2019
· Stanford HCI, CA. 2018
· University of Chicago, IL. 2018
· CSCW Doctoral Consortium, NYC. 2018
· Precision Medicine Initiative, La Jolla, CA. 2018
· Learning@Scale, London. 2018
· MIT Teaching Systems Lab, MA. 2018
· MIT Innovation Lab, MA. 2018
· CHI, Denver, CO. 2017
· South Asia Initiative, UC San Diego. 2018

Community outreach

· Citizen Science Expo, San Diego, CA. April 2019
· Citizen Science Association, Raleigh, NC. 2019
· MyLymeData, San Ramone, CA. 2018
· Research Expo UC San Diego. 2016, 2017, 2018
· Nerd Nite, San Diego, CA. 2018
· Maker Faire, San Diego, CA. 2017
· Fermenter's Club, San Diego, CA. 2018
· Digestive Disease Week, Chicago, IL. 2017
· Health Data Exploration, UC San Diego. 2017
First Prize in Posters category

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, run-ning 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 Cogntive 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 → ServiceNow
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 — *Summer 2010*
Talks and activities about using technology to solve socio-economic problems

Summer Intern, Chinese University of Hong Kong — *Summer 2009*
Constructing convolutional multicast codes for any arbitrary network with cycles — *Networks Theory*

Research Intern, Indian Statistical Institute, Kolkata — *Jan-April 2009*
Finding nearby devices without exchanging exact locations — *Security, Privacy*

Trainee, Vikram Sarabhai Space Centre, Trivandrum — *Summer 2008*
Prototype design of crew health monitoring system — *Circuit Design*

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