Vineet Pandey

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Research Interests

My work as a Human-computer interaction researchers focuses on building systems for community-expert collaboration. My work finds application in telemedicine and citizen science systems that enable communities to create knowledge about personally meaningful topics, such as gut health and movement disorders. Improving on computational techniques, experts' knowledge, and people's capacity, my research systems have been widely used by people with rare neurological disorders (such as Ataxia-telangiectasia), citizen scientists at the American Gut Project (world's largest crowdfunded citizen science project) and Open Humans biohackers. Methodologically, my research systems advance the design of social computing systems by integrating learning and collaboration among experts and communities to enable complex work such as generating and evaluating scientific theories.

RESEARCH EXPERIENCE

2019-	**Postdoctoral Fellow**, Computer Science, Harvard University, MA, USA Affiliate, Center for Research on Computation and Society Faculty Mentor: Krzysztof Z. Gajos, PhD Professor of Computer Science at the School of Engineering and Applied Sciences
2019-	**Non-Employee Researcher**, Massachusetts General Hospital, Boston, MA, USA Faculty Mentor: Anoopum Gupta, MD, PhD (Neurology, Harvard Medical School)

EDUCATION

2019	**Ph.D. in Computer Science & Engineering** University of California San Diego, La Jolla, CA **School of Engineering Henry Booker Award for Exemplary Ethical Engineering** Thesis: Citizen-led Work using Social Computing and Procedural Guidance Advisor: Scott Klemmer, PhD, Professor, Cognitive Science & Computer Science and Engineering Committee members: Don Norman, Jim Hollan, Rob Knight, Laurel Riek
2011	**Bachelor of Engineering (Honors), Computer Science** BITS Pilani, India Thesis: Integer Representations towards Efficient Counting in the Bit Probe Model Advisor: Srinivasa S. Rao (Seoul National University, South Korea)

PUBLICATIONS AND PATENTS

In Human-Computer Interaction, junior authors are generally listed first; supervising faculty generally listed last. The premier HCI publication venues are the annual ACM CHI, UIST, & CSCW conferences.
* implies the paper has been taught at a university.

Submitted Publications

Unsupervised use of web-based tool reliably estimates severity of a neurological rare disorder · *In Submission* · **Vineet Pandey**, Nergis C. Khan, Anoopum S. Gupta, Krzysztof Z. Gajos.

Understanding Clinician Perspectives to Identify Opportunities for Telemedicine Beyond COVID-19. · Hannah Studd, Krzysztof Z. Gajos, Anoopum Gupta, **Vineet Pandey**, Maia Jacobs *In submission*

Selected Publications

1 Galileo: Citizen-led Experimentation using a Social Computing System · *ACM CHI 2021* · **Vineet Pandey**, Tushar Koul, Chen Yang, Mad Price Ball, Bastian Greshake Tzovaras, Daniel McDonald, Rob Knight, Scott Klemmer.

 * Taught at Northwestern University (*COMP_SCI 496: Interactive Systems for Health Behavior Change*)

2 Docent: Transforming Personal Intuitions to Scientific Hypotheses through Content Learning and Process Training · *ACM Learning@Scale 2018* · **Vineet Pandey**, Justine Debelius, Embriette Hyde, Tomasz Kosciolek, Rob Knight, Scott Klemmer

3 Gut Instinct: Creating Scientific Theories with Online Learners · *ACM CHI 2017* · **Vineet Pandey**, Amnon Amir, Justine Debelius, Embriette Hyde, Tomasz Kosciolek, Rob Knight, Scott Klemmer

Additional Published Research

4 Free-living motor activity monitoring in ataxia-telangiectasia · *2021 The Cerebellum (June, Issue#3)* · Nergis C. Khan, **Vineet Pandey**, Anoopum Gupta, Krzysztof Gajos

5 From novices to co-pilots: Fixing the limits on scientific knowledge production by accessing or building expertise · *LIMITS 2020* · **Vineet Pandey**, Anoopum Gupta, Krzysztof Gajos

 * Taught at University of Southern California (*CSCI 499: Computing for Social Good*)

6 American gut: an open platform for citizen science microbiome research · *American Society for Microbiology mSystems 2018* · Daniel Mcdonald, Rob Knight, **American Gut Consortium**

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

 * Taught at Carnegie Mellon University (*05-499A / 05-899A: Designing large-scale (peer) learning systems*) and Northwestern University (*EECS 497: Peer Grading*)

8 An HCI View of Configuration Problems · *arXiv (NOT peer-reviewed)* · Tianyin Xu, **Vineet Pandey**, Scott Klemmer

9 Concerto: A High Concurrency Key-Value Store with Integrity · *ACM SIGMOD 2017* · Arvind Arasu, Ken Eguro, Raghav Kaushik, Donald Kossmann, Pingfan Meng, **Vineet Pandey**, Ravi R.

 * Taught at UIUC (*CS 525: Advanced Distributed Systems*) and Brown University

10 Integer Representations towards Efficient Counting in the Bit Probe Model · *Journal of Discrete Algorithms 2014, Theory and Applications of Models of Computation 2011* · Gerth S. Brodal, Mark Greve, **Vineet Pandey**, S. Srinivasa Rao.

 * CS Comprehensive requirement at Sewanee University

Manuscripts in Preparation

a Constructive Activities for People to Develop Their Creative Scientific Insights. · Vineet Pandey, Tricia Ngoon, Sam Lau

b At-home performance on a pointing task demonstrates unique reliability and validity profiles across neurological disorders. · **Vineet Pandey**, Krzysztof Z Gajos, Anoopum S Gupta

Patents

1 Controlling Verification of Key-Value Stores. Arvind Arasu, Ken Eguro, Raghav Kaushik, Donald Kossmann, Pingfan Meng, Vineet Pandey, Ravi R. (Microsoft Research). 2018.

2 Migrating data from legacy storage systems to object storage systems. Vineet Pandey, Chhavi Sharma, Ranjit Kumar, Kaladhar Voruganti, Parag Deshmukh (NetApp, Inc.). 2014.

Short Papers (Includes Abstracts, Extended Abstracts, and Workshop papers)

1 At-home use of a computer-based tool for estimating motor impairment severity · *2021 Annual Health Data Science Symposium at Harvard (Smartphones, Wearables, and Health)* · **Vineet Pandey**, Jessey Ouillon, Krzysztof Z. Gajos, Anoopum S. Gupta

2 Using Active Digital Phenotyping to Quantify Function and Cognition in Amyotrophic Lateral Sclerosis (ALS) · *33rd International Symposium on ALS/MND* · Zoe Scheier, Alison P. Clark, Mackenzie Keegan, Kelley Erb, Evan Remington, Sheena Chew, Roland Brown, Jessey Ouillon, **Vineet Pandey**, Krzysztof Z. Gajos, Anoopum S. Gupta, Katherine M. Burke, James D. Berry

3 Beyond Data Tracking: A Proposal to Design Health Interfaces for Learning and Sharing · **Vineet Pandey** · *2021 ACM IUI Workshop: Healthy Interfaces (HEALTHI)*

4 Neurological assessments without clinical supervision for a rare disease · **Vineet Pandey**, Nergis C. Khan, Anoopum S. Gupta, Krzysztof Z. Gajos · *2020 AMIA Workgroup on Interactive Systems in Health (WISH)*

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

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

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

8 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*

9 Game-Theoretic Models Identify Useful Principles for Peer Collaboration in Online Learning Platforms · **Vineet Pandey**, Krishnendu Chatterjee · *2016 ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW)*

10 Education Across Borders: Technology Supported Mentoring and Teambuilding · **Vineet Pandey** · *2016 ACM CHI Workshop: HCI Across Borders*

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

12 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*

PRESENTATIONS

Invited Talks

· American Society of Microbiology, SF, CA. 2019
· AAAS-DesignLab Posters-Demos, SD, CA. 2019
· MIT Innovation Lab, MA. 2018

Lunch Talks

· Stanford HCI, CA. 2018
· University of Chicago, IL. 2018
· Precision Medicine Initiative, La Jolla, CA. 2018
· MIT Teaching Systems Lab, MA. 2018
· South Asia Initiative, UC San Diego. 2018

Conferences

· Mass General Hospital Ataxia Center Symposium,
· Citizen Science Association, Raleigh, NC. March 2019
· ACM CHI, Galileo. 2021
· ACM Learning@Scale, London. 2018
· ACM CHI, Denver, CO. 2017
· CSCW Doctoral Consortium, NYC. 2018
· ACM IUI Healthy Interfaces workshop , Virtual. 2021

Posters

· Neurological assessments without clinical supervision for a rare disease. *2020 AMIA Workgroup on Interactive Systems in Health (WISH)*
· Citizen Science Association, Raleigh, NC. March 2019
· Game-Theoretic Models Identify Useful Principles for Peer Collaboration in Online Learning. *CSCW 2016*
· Integrating Citizen Science with Online Learning to Ask Better Questions. *HCOMP 2016*
· Gut Instinct: Creating Scientific Theories with Online Communities · Vineet Pandey · CSCW Doctoral Consortium 2018. *HCOMP 2016*
· Digestive Disease Week, Chicago, IL. 2017
· Health Data Exploration 2017, UC San Diego.
· Connecting Stories and Pedagogy Increases Participant Engagement in Discussions, with Yasmine Kotturi, SD, USA. 2016
· Gut Instinct posters, at research expo with all the students
· Research Expo UC San Diego, 2016, 2017, 2018– – Add this three times

Research Outreach

· A-TCP meeting
· Citizen Science Expo, San Diego, CA. April 2019
· MyLymeData, San Ramone, CA, Apr 2018
· Nerd Nite, San Diego, CA. 2018
· Maker Faire, San Diego, CA. 2017
· Beer and cheese communities: Queso Diego, Fermenter's Club, 2018
· Lyme community, Pittsburgh

Teaching Assistant

Responsibilities included running sections; creating problem sets; curating course reading lists; mentoring students projects; delivering guest lectures; need finding; running user studies; building apps; running experiments
· Research in Human-Computer Interaction Design
· Human-Computer Interaction Design
· Introduction to Design
· Undergraduate Machine Learning

Professional Assistant (Undergraduate)

Assisted faculty in class hour teaching; cleared course concepts to students, conducted quizzes
· Digital Electronics and Computer Organisation course at BITS Pilani

Advisor

· Thesis Advisor Committee member for Ph.D. student Center for Research and Interdisciplinarity, Université de Paris (UdP)
· Auxiliary Supervisor for Undergraduate Thesis, Lodz University of Technology, Poland and Visting Student at Harvard University
· Ph.D. mentor for one student, UCSD Cogntive Science
· M.S.Mentor for one student, UCSD Computer Science

Mentor

9 undergraduate students

FELLOWSHIPS & AWARDS

2018, First Prize in Posters, Personal Health Data workshop
2019, UC San Diego School of Engineering Exemplary Ethical Engineering Award
2013, 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 (This is **not** affiliated with the official Oplympiad programs in India)

Committee Experience

Program Committee responsibilities include managing the peer-review process
· ACM SIGCAS Computing and Sustainable Societies, COMPASS 2022
· ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2022
· ACM Conference on Human Factors in Computing Systems, CHI 2022
· ACM Conference on Human Factors in Computing Systems, CHI 2021
· ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2021
· ACM Designing Interactive Systems, DIS 2021
· ACM Creativity & Cognition, C&C 2021
· LIMITS workshop at ICT4Sustainability 2021
· ACM Conference on Human Factors in Computing Systems, CHI (Extended Abstracts) 2021
· ACM Creativity & Cognition, C&C 2019
· ACM Learning@Scale, L@S 2019

Reviewing Experience

Reviewer responsibilities include writing full reviews of papers
· American Medical Informatics Association Annual Symposium, AMIA 2021
· ACM SIGACCESS Conference on Computers and Accessibility, ASSETS 2021
· ACM Conference on Human Factors in Computing Systems, CHI 2020
· ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2020
· Symposium of the Workgroup on Interactive Systems in Health, WISH 2020
· ACM Designing Interactive Systems, DIS 2019
· ACM Designing Interactive Systems - Extended Abstracts, DIS 2019
· ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2019
· ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2018
· ACM Conference on Human Factors in Computing Systems, CHI 2018
· ACM Conference on Human Factors in Computing Systems, CHI 2017