

Vineet Pandey

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Research Interests

The current approach of relying solely on institutional experts to create knowledge is insufficient to meet the scale, diversity, and novelty of people's needs. To answer this fundamental societal and intellectual challenge, I use my training as a **Human-computer interaction researcher** to build **telemedicine and citizen science systems** that enable communities to create knowledge about personally-meaningful topics such as gut health and movement disorders. My research systems build on (and improve) computational techniques, experts' knowledge, and people's capacity. People with rare neurological disorders (like Ataxia-telangiectasia), citizen scientists at the American Gut Project (world's largest crowdfunded citizen science project) and Open Humans biohackers have used my systems. 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

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.

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 implies the paper has been taught at a university.

Select Publications

- 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.

- (T) Taught at University of Southern California (*CSCI 499: Computing for Social Good*), Northwestern University (*COMP_SCI 496: Interactive Systems for Health Behavior Change*)
- 2 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.
- 3 Docent: Transforming Personal Intuitions to Scientific Hypotheses through Content Learning and Process Training · *ACM Learning@Scale 2018* · **Vineet Pandey**, Justine Debelius, Embriette Hyde, Tomasz Kosciolk, 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
- (T) 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 Gut Instinct: Creating Scientific Theories with Online Learners · *ACM CHI 2017* · **Vineet Pandey**, Amnon Amir, Justine Debelius, Embriette Hyde, Tomasz Kosciolk, Rob Knight, Scott Klemmer
- 8 Framing Feedback: Choosing Review Environment Features that Support High Quality Peer Assessment · *ACM CHI 2016* · Catherine Hicks, **Vineet Pandey**, Ailie Fraser, Scott Klemmer
- (T) Taught at Carnegie Mellon University (*05-499A / 05-899A: Designing large-scale (peer) learning systems*) and Northwestern University (*EECS 497: Peer Grading*)
- 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.
- (T) Taught at UIUC (*CS 525: Advanced Distributed Systems*) and Brown University.
- 10 An HCI View of Configuration Problems · *arXiv (NOT peer-reviewed)* · Tianyin Xu, **Vineet Pandey**, Scott Klemmer
- 11 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.
- (T) CS Comprehensive requirement at Sewanee University

Additional Manuscripts under Review

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

Manuscripts in Preparation

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

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 In Submission: 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**, Jesse Ouillon, Krzysztof Z. Gajos, Anoopum S. Gupta
- 2 Using Active Digital Phenotyping to Quantify Function and Cognition in Amyotrophic Lateral Sclerosis (ALS) · *2021 Northeast Amyotrophic Lateral Sclerosis Consortium (NEALS) and 33rd International Symposium on ALS/MND* · Zoe Scheier, Alison P. Clark, Mackenzie Keegan, Kelley Erb, Evan Remington, Sheena Chew, Roland Brown, Jesse 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 Kosciolk, Rob Knight · *HCOMP 2016*
- 9 Game-Theoretic Models Identify Useful Principles for Peer Collaboration in Online Learning Platforms · **Vineet Pandey**, Krishnendu Chatterjee · *2016 Poster at 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 & ADVISING EXPERIENCE

Teaching Assistant

- **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
- **Professional Assistant (Undergraduate)**, *Digital Electronics and Computer Organisation course at BITS Pilani*
Assisted faculty in class hour teaching, cleared course concepts to students

Advisor

Students worked with me to design, program, and learn how to present research. For both, this was their first HCI research experience. We discussed research and commented on prototypes.

- **Thesis Advisor Committee member**, Katharina Kloppenborg Center for Research and Interdisciplinarity, Université de Paris (UdP)
- **Auxiliary Supervisor for Undergraduate Thesis**, Aleksandra Koralczyk Lodz University of Technology, Poland; Visting Student at Harvard University
- **PhD mentor**, Sam Lau, UCSD Cognitive Science
- **Mentor for Masters research** Tushar Koul → TaskRabbit

Mentor for undergraduate research credits

- Orr Toledano UCSD → Amazon
- Kaung Yang → ServiceNow
- Senyan Luo, MFA, Design and Technology, Parsons School of Design - The New School
- Dingmei Gu (at UCSD)
- Liby Lee → Coursera → U.Penn. CS PhD
- Chen Yang → GoDaddy → Google
- Brian Soe → GE Digital → PlanGrid
- Cody Doan → Viasat
- Rachel Chen program – Rachel Chen→ MS (HCI) Georgia Tech
- Crystal Kwok → Bluebeam Co-Mentor with Catherine

FELLOWSHIPS & AWARDS

Academic Recognition

- 2012: Exemplary Ethical engineering
- 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 (This is **not** affiliated with the official Olympiad programs in India)

Travel Awards

Participant, Microsoft Research Summer School

Summer 2010

Talks and activities about using technology to solve socio-economic problems

PROFESSIONAL SERVICE

Committee Experience

Program Committee responsibilities include managing the peer-review process

Program Committee, ACM SIGCAS Computing and Sustainable Societies, COMPASS 2022

Program Committee, ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2022

Program Committee, ACM Conference on Human Factors in Computing Systems, CHI 2022

Program Committee, ACM Conference on Human Factors in Computing Systems, CHI 2021

Program Committee, ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2021

Program Committee, ACM Designing Interactive Systems, DIS 2021

Program Committee, ACM Creativity & Cognition, C&C 2021

Program Committee, LIMITS workshop at ICT4Sustainability 2021

Program Committee, ACM Conference on Human Factors in Computing Systems, CHI (Extended Abstracts) 2021

Program Committee, ACM Creativity & Cognition, C&C 2019

Program Committee, ACM Learning@Scale, L@S 2019

Reviewing Experience

Reviewer responsibilities include writing full reviews of papers

Reviewer, American Medical Informatics Association Annual Symposium, AMIA 2021

Reviewer ACM SIGACCESS Conference on Computers and Accessibility, ASSETS 2021

Reviewer, ACM Conference on Human Factors in Computing Systems, CHI 2020

Reviewer, ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2020

Reviewer, Symposium of the Workgroup on Interactive Systems in Health, WISH 2020

Reviewer, ACM Designing Interactive Systems, DIS 2019

Reviewer, ACM Designing Interactive Systems - Extended Abstracts, DIS 2019

Reviewer, ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2019

Reviewer, ACM Conference On Computer- Supported Cooperative Work And Social Computing, CSCW 2018

Reviewer, ACM Conference on Human Factors in Computing Systems, CHI 2018

Reviewer, ACM Conference on Human Factors in Computing Systems, CHI 2017