Andrew Sonta

andrew.sonta@columbia.edu andrewsonta.com Updated February 2021

ACADEMIC EXPERIENCE

Postdoctoral Research Scientist <i>Columbia University, Data Science Institute</i> Advisors: Xiaofan (Fred) Jiang and Andrew Smyth	January 2021–
Stanford Graduate Fellow Stanford University, Urban Informatics Lab Advisor: Rishee Jain	2015-2020
NSF Research Experience for Undergraduates (REU) Northwestern University Advisor: Giuseppe Buscarnera	Summer 2014
Wanxiang Fellow Northwestern University, Peking University, Wanxiang Polytechnic Institute	Summer 2013
EDUCATION	
PhD, Civil & Environmental Engineering Stanford University Dissertation: Integrating social and environmental perspectives in building design and operation	January 2021
MS, Civil Engineering Stanford University	March 2017
BS, Civil Engineering, <i>summa cum laude</i> <i>Northwestern University</i> Minor: Economics Certificates: Architectural Engineering & Design, Sustainability & Energy	June 2015
TEACHING AND MENTORING EXPERIENCE	
Adjunct Professor University of San Francisco Environmental Control Systems (ARCD 312) in the Architecture and Community Design Progr	Fall 2019 am
Guest Lecturer	2017-2019

Stanford University and University of San Francisco

Engineering Design and Testing, USF: Lecture on life-cycle assessment (2019)	
Network Analysis for Urban Systems, Stanford: Lecture on network inference (2017, 2018)	
Research Mentor	2017-2020
Stanford University, Urban Informatics Lab	
Two MS students and two BS students	
Course Developer & Instructor	2017-2018
Stanford University	
CEE 126X/Y/Z: Hard Earth: Graduate Student Talks Exploring Tough Environmental Dilemmas	
Teaching Assistant	Spring 2017
Stanford University	
CEE 345: Network Analysis for Urban Systems	
Course Developer & Instructor	2017-2019
Stanford University Splash	
Designing Cities of the Future	

JOURNAL ARTICLES

- J1. A. Sonta, T. R. Dougherty, and R. K. Jain. (2021). "Data-driven optimization of building layouts for energy efficiency." *Energy and Buildings*.
- J2. A. Sonta and R. K. Jain. (2020). "Learning socio-organizational network structure in buildings using ambient sensing data," *Data-Centric Engineering*, *1*, E9.
- J3. E. Azar, W. O'Brien, S. Carlucci, T. Hong, A. Sonta, J. Kim, M. Andargie, T. Abuimara, M. El Asmar, R. K. Jain, M. Ouf, F. Tahmasebi, and J. Zhou. (2020). "Simulation-aided occupant-centric building design: A critical review of tools, methods, and applications," *Energy and Buildings*, 224, 110292.
- J4. A. Sonta and R. K. Jain. (2019). "Building relationships: Using embedded plug load sensors for occupant network inference," *IEEE Embedded Systems Letters*, *12* (2), 41–44. [Invited Paper].
- J5. A. Sonta, P. E. Simmons, and R. K. Jain. (2018). "Understanding building occupant activities at scale: An integrated knowledge-based and data-driven approach," *Advanced Engineering Informatics*, *37*, 1–13.
 ☐ Ø
- J6. A. Sonta, R. K. Jain, R. Gulbinas, J. M. F. Moura, and J. E. Taylor. (2017). "OESP_G: Computational framework for multidimensional analysis of occupant energy use data in commercial buildings," *Journal of Computing in Civil Engineering*, *31*, 04017017. 🖹
- J7. S. Gao, Y. D. Zhang, **A. Sonta**, and G. Buscarnera. (2016). "Evolution of the water retention characteristics of granular materials subjected to grain crushing," *Journal of Geotechnical and Geoenvironmental Engineering*, 142.

PEER-REVIEWED CONFERENCE PAPERS & PRESENTATIONS

- C1. T. R. Dougherty, A. Sonta, and R. K. Jain. (2020). "Intelligent network topology based post-pandemic reintroduction policies for offices," in *Proceedings of the 7th ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys 2020)*, (Yokohama, Japan), pp. 258-261, ACM.
- C2. A. Sonta and R. K. Jain. (2019). "Data-driven building layout optimization for energy efficiency," in *International Conference on Applied Energy*, (Västerås, Sweden), Elsevier.

- C3. **A. Sonta** and R. K. Jain. (2019). "Optimizing neighborhood-scale walkability," in *International Conference on Computing in Civil Engineering*, (Atlanta, GA), pp. 454-461, American Society of Civil Engineers.
- C4. A. Sonta and R. K. Jain. (2018). "Inferring occupant ties: Automated inference of occupant network structure in commercial buildings," in *Proceedings of the 5th ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys 2018)*, (Shenzhen, China), pp. 126-129, ACM. [Invited for special issue in *IEEE Embedded Systems Letters*]
- C5. Y. D. Zhang, J. S. Park, S. Gao, A. Sonta, B. Horin, and G. Buscarnera. (2018). "Effect of grain crushing and grain size on the evolution of water retention curves," in *PanAm Unsaturated Soils 2017*, (Dallas, TX), pp. 268–278, American Society of Civil Engineers. ∎
- C6. A. Sonta, P. E. Simmons, and R. K. Jain. (2017). "Towards automated inference of occupant behavioral dynamics using plug-load energy data," in *Congress on Computing in Civil Engineering, Proceedings*, (Seattle, WA), pp. 290-297, American Society of Civil Engineers.

CONFERENCE POSTER PRESENTATIONS

P1. A. Sonta and R. K. Jain. (2019). "Inferring occupant ties in dynamic office environments," *International Conference on Computing in Civil Engineering*, (Atlanta, GA).

INVITED TALKS

Building Energy and Environments Seminar Series, University of Texas at Austin <i>Austin, TX/Remote</i>	2021
ENAC Seminar Series, École polytechnique fédérale de Lausanne Lausanne, Switzerland/Remote	2021
Center for Urban Science and Progress Seminar Series, New York University <i>Brooklyn, NY</i>	2020
Data Science for Sustainability <i>Millbrae, CA</i>	2019
The 5th International Symposium on Occupant Behaviour (IEA-EBC Annex 79) San Antonio, TX	2019
Stanford University Sustainable Urban Systems Seminar Stanford, CA	2019
The 4th International Symposium on Occupant Behaviour (IEA-EBC Annex 79) Ottawa, Ontario, Canada	2018
Precourt Institute for Energy Student Lecture Series Stanford, CA	2018
San Francisco Department of the Environment <i>San Francisco, CA</i>	2017

GRANTS AND FELLOWSHIPS

National Science Foundation, Cyber-Physical Systems Building Information, Inhabitant, Interaction, and Intelligent Integrated Modeling (BI ⁵ M) Role: Co-lead author of proposal. PI: Rishee Jain. (\$280,000)		
Center for Integrated Facility Engineering Seed Grant Building for the Occupant: Optimizing Building Layouts for Energy Efficiency and Organizationa Role: Lead author of proposal. PI: Rishee Jain. (\$39,113)	2019–2020 l Performance	
Center for Integrated Facility Engineering Seed Grant <i>Beyond the Building: Urban Information Modeling (UIM)</i> Role: Lead author of proposal. PI: Rishee Jain. (\$55,000)	2016–2017	
Stanford Graduate Fellowship (\$243,000)	2015-2018	
LEADERSHIP AND ACTIVITIES		
Stanford Engineering Summer Service Learning Program Stanford University and Today's Youth Asia, Kathmandu, Nepal Worked with an interdisciplinary team of 6 engineers on the design of sustainable and earthquake-re in Dolakha, Nepal	2018 sistant housing	
Graduate Life Committee Stanford University Department of Civil & Environmental Engineering Student representative elected to discuss student issues with departmental leadership	2016-2018	
Sustainable Design & Construction Leadership Committee Stanford University Treasurer and Golf Tournament Chair	2015–2016	
Northwestern University Dance Marathon Northwestern University Executive Committee Productions Chair (Raised \$1.2 million for beneficiary)	2014–2015	

ACADEMIC SERVICE

Organizations	American Society of Civil Engineers, Associate Member Energy Information Agency EBC Annex 79, Member Stanford Energy Club, Officer & Member
Reviewer	Joule Building Simulation Automation in Construction IEEE Access Intelligent Buildings International

HONORS AND AWARDS

Preparing Future Professors Program	2018-2019
Stanford University	
Competitive mentorship program with the University of San Francisco focused on training PhD studen	nts for careers
in academia, with an emphasis on teaching	
Woods Institute Rising Environmental Leaders Program	2017-2018
Stanford University	
Competitive leadership training program focused on environmental policy in Washington, DC and	l Sacramento,
CA	
Fellow — Digital X Workshop (U.S. Representative)	2018
Norman Foster Foundation	
One of ten fellows from around the world selected to participate in a week-long workshop hosted	l by Norman
Foster focused on digital design	
Civil Engineering Senior Award	2015
Northwestern University	
Award given to graduating senior with highest academic achievement	
Tau Beta Pi Engineering Honor Society (elected as junior)	2014
American Institute of Steel Construction Scholarship	2014
Associated Steel Erectors Scholarship	2014
Gamma Sigma Alpha Greek Honor Society	2013
Hillier L Baker III Memorial Scholarship	2013
Northwestern Scholarship	2011

SKILLS

Programming	Python, R, МатLав, C++, Java
Engineering	Revit/Dynamo, Rhino/Grasshopper, AutoCad
Design	Adobe Illustrator/InDesign/Photoshop