ALAN WANG

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Education

University of Virginia (UVA) — Charlottesville, VA
Ph.D. in Computer Engineering (GPA: 3.85, h-index: 3) — *Jan. 2018 – Expected May. 2023*

University of Southern California (USC) — Los Angeles, California
Bachelor of Architecture (GPA: 3.45), minor in Applied Computer Security (GPA: 3.91) — *Aug. 2012 – May 2017*

Technical Skills

Coding Languages: Python, Java, C#, C++, C
Data Analysis software/packages: Pandas, Matplotlib, Seaborn, Scikit-learn
Web Development: Django, Selenium, Bootstrap, JavaScript, JQuery, Beautiful-Soup, OWASP
Design Software: Unity, Photoshop, Illustrator, InDesign, Figma, Rhinoceros, Grasshopper, Honeybee/Ladybug, VRay, Revit, Maya, AutoCAD

Research

Accepted First Author Publications

- **Wang, A.**, Su, J., Heydarian, A., Campbell, B., & Beling, P. (2020, November). Is my sensor sleeping, hibernating, or broken? A data-driven monitoring system for indoor energy harvesting sensors. In Proceedings of the 7th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (pp. 210-219).
- **Wang, A.**, & Heydarian, A. (2019). Exploring the Effects of Lighting Brightness and Color on Occupancy and Emotions. In Computing in Civil Engineering 2019: Smart Cities, Sustainability, and Resilience (pp. 1-7). Reston, VA: American Society of Civil Engineers.

Other Accepted Publications

- Rantas, J., Wang, D., Jarrard, W., Sterchi, J., **Wang, A.**, Varnosfaderani, M. P., Heydarian, A. (2021, April). A User Interface Informing Medical Staff on Continuous Indoor Environmental Quality to Support Patient Care and Airborne Disease Mitigation. In 2021 Systems and Information Engineering Design Symposium (SIEDS) (pp. 1-6). IEEE.
- Pisello, A. L., I. Pigliautile, M. Andargie, C. Berger, P. M. Bluyssen, S. Carlucci, G. Chinazzo et al. "Test rooms to study human comfort in buildings: A review of controlled experiments and facilities." Renewable and Sustainable Energy Reviews 149 (2021): 111359.
- Rantas, J., Wang, D., Jarrard, W., Sterchi, J., **Wang, A.**, Varnosfaderani, M.P. and Heydarian, A., 2021, April. A User Interface Informing Medical Staff on Continuous Indoor Environmental Quality to Support Patient Care and Airborne Disease Mitigation. In 2021 Systems and Information Engineering Design Symposium (SIEDS) (pp. 1-6). IEEE.
- Heydarian, A., Pantazis, E., **Wang, A.**, Gerber, D., & Becerik-Gerber, B. (2017). Towards user centered building design: Identifying end-user lighting preferences via immersive virtual environments. In Automation in Construction, 81, 56-66.
- Gerber, D. J., Pantazis, E., & **Wang, A.** (2017). A multi-agent approach for performance-based architecture: Design exploring geometry, user, and environmental agencies in façades. In Automation in Construction, 76, 45-58.
- Gerber, D. J., Pantazis, E., & **Wang, A.** (2017). Interactive Design of Shell Structures Using Multi Agent Systems: Design Exploration of Reciprocal Frames Based on Environmental and Structural Performance.
- Pantazis, E., Gerber, D., & **Wang, A.** (2016). A Multi-Agent System for Design: Geometric Complexity in Support of Building Performance. Proc. SimAUD, 137-146.

Work In Progress

- **Wang, A.**, Yi, F, Nasir, N. Mobile Sensing Unit: Continuous Robotic Indoor Environmental Sensing
- **Wang, A.**, Tu, L., Heydarian, A., Campbell, B. Towards Simulation Augmented Privacy-Aware Light Sensors

- **Wang, A.**, Kaur, N., Tavakoli, A et al. Exploring the Relationship Between Sleep Disruptions and the Hospital Environment Using IoT Devices
- Le, T., **Wang, A.**, Yao, Y., Feng, Y., Heydarian, A., Sadeh, N., Tian, Y. Occupants' awareness, perception, and notification preference of IoT Devices in Smart Buildings
- Kaur, N., **Wang, A.**, Pahlavikhah, M., Nikseresht, F., Guo, X. Yan, R., Barnes, L. Heydarian, A. A Survey of Indoor Well-being Sensing

Proposals

- Figures, National Science Foundation (NSF) FW-HTF-RM: Preserving Worker Privacy in Data-Driven Smart Workspaces, *Fall 2019*
- Figures and edits, NSF CPS Medium: User-Centered Design for Preserving Privacy in Human-Building Interactions, *Fall 2019*

Patents

- Arsalan Heydarian, Brad J. Campbell, Peter Beling, **Alan Wang** and Jianyu Su. Data-Driving Monitoring System for Energy Harvesting Sensors and Related Methods Thereof. U.S. Provisional Patent 63/107,204, filed on October 29, 2020.

Awards

- **UVA Biocomplexity Institute** *Data Science for the Public Good Fellowship*, *Summer 2022*
- **UVA Engineering Endowed Fellowship**, *Fall 2021*
- **UVA Link Lab Student Flash Talk Award**, *Fall 2021*
- **NSF Cyber Physical Systems Principle (CPS) Investigators Meeting**, Graduate Student Presentation, Second Place, *Summer 2021*
- **Virginia Commonwealth Cyber Initiative (CCI)**, Building Aware Light Sensing, *Summer 2020*
- **NSF Innovation-Corps (I-Corps)**, Oct/Nov Cohort, *Fall 2019*
- **NSF I-Corps**, May/June Cohort, *Summer 2019*
- **NSF Graduate Research Fellowship Program**, Honorable Mention, *2019*
- **NSF Research Experiences for Undergraduates**, Undergraduate Researcher, *2016 - 2018*
- **USC First Generation Mentorship**, *Spring 2015*

Presentations

- Building Aware Light Sensing, Commonwealth Cyber Initiative (CCI) Central Virginia Node Summer Meeting, *Summer 2021*
- A Systematic Approach to Preserve Privacy in Smart Buildings , International Energy Agency (IEA) Energy in Buildings and Communities Programme (EBC) Annex 79, Occupant-centric building design and operation, *Spring 2020*
- Occupant behavior + interactions with building interfaces, IEA EBC Annex 79, *Fall 2019*
- Ubiquitous computing and human-centric sensing to enhance occupant experience and building operations, UVa Thornton Society, *Fall 2019*
- UVa Link Lab Open House, *Spring 2019, Spring 2018*

Coursework/Teaching

Official Coursework

Engineering Interactive Technologies (A+) — Computer Science
Professor Seongkook Heo — *Spring 2021*

- Final Project: Augmented Reality Sandbox, an augmented reality sandbox game using Unity, Microsoft Kinect 2, and EM River 4 that challenges the traditional gamer roles by incorporating computer gamers and sandbox gamers together in a supervised interactive experience.
- Force Pedmoeter, A sock-based gaming interface using a force sensor, Processing, and an Arduino, for playing a modified game of pong.

Robots and Humans (A) — Computer Engineering
Professor Tariq Iqbal — *Spring 2021*

- Final project: How Can Robots Better Serve Food?, a human robot interaction experiment that establishes a general food serving method for the NAO robot to give food suggestions based on calorie count with the combination of other features.

Embedded Computing and Robotics (A) — Computer Engineering
Professor Joanne Dugan — *Fall 2019*

- Final project: TI Robot Systems Learning Kit MAX, a line-reading robot using the MSP-EXP432P401R, TI-RSLK chassis board, 8 Channel QTRX sensor array for line sensing, and left and right bump switch sensors for obstacle detection, and 2x Gear motor and encoder assembly.

Computer Architecture (CR) — Computer Engineering
Professor Ron Williams — *Spring 2020*

- Final project: Designing and Implementing a RISC Processor in VHDL

User Experience Design (A) — Systems Engineering
Professor Gregory Gerling — *Spring 2019*

- Final Portfolio: three user interfaces designed for three different clients ranging from: the Albermarle Fire Department, alarm.com, and the University of Virginia.

Defense Against the Dark Arts (B) — Computer Science
Professor Jack Davidson — *Spring 2019*

- Final project: Fuzzing a Heart Model, we explore two different types of heart models within Matlab Simulink as a way to extend the concept of fuzzing into the realm of cyber-physical systems: 1) a pacemaker model which paces the atrioventricular node and its relationship via conduction with the sinoatrial node, and 2) a Heart Systemic Pulmonary (HSP) model that models the human cardiovascular system, including the pulmonary and systemic circulatory systems.

Principles of Modeling for Cyber Physical Systems (A) — Computer Science
Professor Madhur Behl — *Fall 2018*

- Report repository includes: state space building and modeling, parameter estimation, transition systems and linear temporal logic.

Cognitive Systems Engineering (A-) — Systems Engineering
Professor Stephanie Guerlain — *Spring 2018*

- Final project: Charlottesville Time Bank, design of a user interface based on Don Norman's *The Design of Everyday Things*.

Reinforcement Learning (A) — Systems Engineering
Professor Peter Beling — *Spring 2018*

- Final project: Agents of Risk, Explorations using different reinforcement learning methods to solve the game of Risk.

Additional Training

- **PhD+ Entrepreneurship Series**, Dr. David Touve, *Spring 2021*
- **Solemma Symposium**, Jon Sargent, *Spring 2020*

- **Knowledge Entrepreneurship**, Dr. Bernard Carlson and Elizabeth Pyle, *Fall 2019*
- Evidn-Cognitive Behavioral Science Initiative (CBSI) **Behavioral Science Training**, Dr. John Pickering and Katri Haanterä, *Fall 2019*
- **Communicating Research**, Marlit Hayslett, *Fall 2019*
- **PhD+ Foundation Series**, Dr. Sonali Majumdar, *Fall 2018*
- **Graduate Writing Lab**, Dr. Kelly Cunningham, *Summer & Fall 2018*

Teaching

- **Teaching Assistant**, Smart and Healthy Buildings, *Fall 2021*
- **Engineering Systems and Environment Capstone Mentor**, A User Interface Informing Medical Staff on Continuous Indoor Environmental Quality to Support Patient Care and Airborne Disease Mitigation, *Spring 2020 - Fall 2021*
- **Instructor**, Yfalos Workshop - Digital Futures, *Summer 2020*
- **Teaching Assistant**, Introduction to Construction Management, *Fall 2019*
- **Teaching Assistant**, Building Information Modeling, *Spring 2019*

Mentoring

- **Feng-Yi Chang**, Computer Engineering masters, *Summer 2021 - Present*
- **Jacob Rantas**, Systems Engineering undergraduate, *Spring 2020 - Spring 2021*
- **Xingyu Liu**, Architecture undergraduate, *Fall 2018 - Spring 2019*
- **Eric Dong**, Architecture and Computer Science undergraduate, *Fall 2018 - Spring 2019*
- **Mary Robertson**, Civil Engineering undergraduate, *Spring 2018*
- **Hannah Jones**, High School, *Summer 2018*

Degree Progress

- Qualifying Exam, *July 2020*

Service

- Manuscript Review for Science and Technology for the Built Environment, *Summer 2021, 2022*
- Taiwanese Graduate Student Association at UVA (TGSA@UVA), President, *2021 - Fall 2022*
- Manuscript Review for Building and Environment, *Spring 2020*
- TGSA@UVA, Vice and Interim President, *2019 - 2020*
- UVA Engineering Systems and Environment Recruitment Weekend, *Spring 2019*
- Link Lab Committee on Culture and Livability, Secretary, *Spring 2018 - Fall 2019*
- Cavelier Judo Club, *2018 - Current*
- VISAS, English Language Volunteering, *Spring 2018*
- USC Trojan Judo Club, *2012-2017*

Work Experience

- UVA Biocomplexity Institute, Social and Decision Analytics Division, *Summer 2021 - Present*
- JFAK Architects, *Summer 2021*
- von Oeyen Architects, *Summer 2021*
- University of Southern California, National Science Foundation Research Experience for Undergraduates *Summer 2021*
- Palos Verdes Art Center, *Summer 2021*