Alexa F. Siu

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EDUCATION

Stanford University, Stanford, CA   June 2017 - Present
PhD Candidate in Mechanical Engineering with a focus on Design and HCI

Stanford University, Stanford, CA   September 2015 - June 2017
M.S. in Mechanical Engineering | GPA: 3.789

Georgia Institute of Technology, Atlanta, GA   August 2011 - May 2015
B.S. in Biomedical Engineering
Minor in Computer Science - Artificial Intelligence

Highest Honors | GPA: 3.86

RESEARCH EXPERIENCE

SHAPE Lab, Stanford University   September 2015 - Present
Research Assistant — PI: Sean Follmer, Ph.D.   *Stanford, CA*

· Developing tools and workflows to support people with visual impairments in designing 3D models and electronics prototyping through a combination of iterative prototyping and human centered design.
· Designing controlled studies to understand haptic perception and inform these designs.
· Designed and developed hardware and software for a novel open-source mobile tabletop shape display. Involved in PCB design, mechanical design, firmware development, communication protocols, coordination with vendors and manufacturers, and integration to virtual reality applications.
· User evaluation on interaction methods for exploring spatial data using a mobile tabletop shape display.
· Investigated the use of tangibles for remote design collaboration. Carried out a formative user study to inform the design of a tangible UI.

CHARM Lab, Stanford University   June 2014 - August 2014
Research Assistant — PI: Allison Okamura, Ph.D.   *Stanford, CA*

· Designed and programmed a controlled user study to characterize the effect of time delay and low-pass filtering on human perception of stiffness and damping in haptic displays.
· Designed a physical variable stiffness and damping environment to interact with the Phantom Premium haptic device to analyze the performance of a bilateral teleoperator.

Lam Lab, Georgia Institute of Technology   October 2012 - May 2015
Research Assistant — PI: Wilbur Lam, M.D., Ph.D.   *Atlanta, GA*

· Investigated the interaction of neutrophil extracellular traps (NETs) and whole blood in relation to thrombosis.
· Developed a children's educational outreach program (BME HealthReach) to implement at hospitals using the patient's disease as a leverage to teach concepts in STEM.
· Assisted in validation through clinical trials and prototyping of an anemia diagnostic device (AnemoCheck) at Children's Healthcare of Atlanta.

PUBLICATIONS

A. F. Siu, J. Miele, S. Follmer. 2018. An Accessible CAD Workflow UsingProgramming of 3D Models and Preview Rendering in A 2.5D Shape Display. In Proceedings of the 20th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '18). ACM, Galway, Ireland. DOI: https://doi.org/10.1145/3234695.3240996

M. A. Lin, **A. F. Siu**, J-H. Bae, M. R. Cutkosky and B. L. Daniel (2018). HoloNeedle: Augmented-reality Guidance System for Needle Placement Investigating the Advantages of 3D Needle Shape Reconstruction. IEEE Robotics and Automation Letters

A. F. Siu, E. J. Gonzalez, S. Yuan, J. Ginsberg, and S. Follmer. 2018. shapeShift: 2D Spatial Manipulation and Self-Actuation of Tabletop Shape Displays for Tangible and Haptic Interaction. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18). ACM, New York, NY, USA. DOI: http://dx.doi.org/10.475/123_4.

A. F. Siu, E. J. Gonzalez, S. Yuan, J. Ginsberg, A. Zhao, and S. Follmer. 2017. shapeShift: A Mobile Tabletop Shape Display for Tangible and Haptic Interaction. In Adjunct Publication of the 30th Annual ACM Symposium on User Interface Software and Technology (UIST '17). ACM, New York, NY, USA, 77-79. DOI: https://doi.org/10.1145/3131785.3131792. **Best Demo Award Honorable Mention**

A. F. Siu, S. Yuan, H. Pham, E. J. Gonzalez, L. H. Kim, M. Le Goc, S. Follmer (2018). Investigating Tangible Collaboration for Design Towards Augmented Physical Telepresence. In: Plattner H., Meinel C., Leifer L. (eds) Design Thinking Research. Understanding Innovation. Springer, Cham

N. Colonnese, **A. F. Siu**, C. M. Abbott and A. M. Okamura (2015) Rendered and Characterized Closed-loop Accuracy of Impedance-type Haptic Displays. IEEE Transactions on Haptics, 8(4):434-446.

E. A. Tyburski, ..., **A. F. Siu**, et. al. (2014). Disposable platform provides visual and color-based point-of-care anemia self-testing. The Journal of Clinical Investigation, 124(10), 43874394. http://doi.org/10.1172/JCI76666

TECHNICAL STRENGTHS

Mechatronics	Circuits & PCB Design, embedded programming.
Programming	C Language, C++, C#, Python, Javascript, LaTeX.
Software	Unity, CircuitMaker (PCB Design), SolidWorks, Illustrator, Photoshop, Premiere, Animate, MATLAB.
Languages	Spanish (native), French (proficient) and Mandarin (elementary proficiency).

AWARDS & HONORS

2018	Bill Moggridge Design Award
2015	National Science Foundation Graduate Research Fellowship (NSF GRFP)
2015	Stanford School of Engineering Fellowship
2014	Stanford University Amgen Scholar
2012	The Coca-Cola Foundation: "100,000 Strong Initiative" Scholarship
2012	Women in Engineering Corporate Award sponsored by Kimberly-Clark
2012	Panama Science, Technology, and Innovation National Undergraduate Scholarship

TEACHING EXPERIENCE

Spring 2018	Teaching Assistant, Stanford University: Introduction to the Design of Smart Products (ME 216M) with Sean Follmer - Graduate Level
Spring 2015	Teaching Assistant, Georgia Institute of Technology: Introduction to Artificial Intelligence (CS 3600) with Prof. Jim Rehg - Undergraduate Level
Fall 2014	Teaching Assistant, Georgia Institute of Technology: Introduction to Biostatistics (BMED 2400) with Prof. Brani Vidakovic - Undergraduate Level

WORK EXPERIENCE

HP Inc - Immersive Experiences Lab (IXL) June 2018 - September 2018
Research Intern — Manager: Dr. Alexander Thayer *Palo Alto, CA*

· Research on the design space of 3D printed auxetics

National Secretariat for Science, Technology and Innovation May 2015 - August 2015
Technology Intern *Panama City, Rep. of Panama*

· Worked on the development of an online electronics and robotics open course in Spanish for Panamanian school teachers.