William Liu

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Education

Carnegie Mellon University, Class of 2020
B.S. Cognitive Science
Minor in Robotics
Alpha Epsilon Pi Fraternity

Select Coursework:
Intro to Machine Learning* (10-401)
Great Ideas in Theoretical CS* (15-251)
Functional Programming* (15-150)
Cognitive Psychology (85-211)
Matrices and Linear Algebra (21-241)
Calculus in 3D (21-259)
Probability Theory (36-217)
*denotes in progress

Skills

Technical:
C, Python, Java, SML, HTML, Javascript, CSS, Arduino, Raspberry Pi, Unity 3D

Design:
InDesign, Photoshop, Illustrator, SolidWorks, AutoCAD, Inventor, Blender, Laser Cutting, 3D Printing

Misc:
LaTeX, Gantt Charts, Chinese, Spanish

Awards/Honors

PennApps XVI
Best Hardware Hack

United States Congress
Congressional Award

Clubs/Activities

Scotch'n'Soda Theatre
Stage and Production Manager, Web Admin
Managed: Heathers The Musical, Rosencrantz and Guildenstern, Young Frankenstein, and The House of Yes

CMU Tricking Club
Founder, President
Tricking is "an aesthetic blend of gymnastics, martial arts, and breakdancing."

Interests/Misc.

Top 100 Pokémon Player,
Filmmaking, League of Legends

Updated: Jan 8, 2018

Experience

Computer Architecture Lab at Carnegie Mellon (CALCM)
Researcher, Dec 2016 — Present
Examined manufacturer-specified DRAM energy levels (IDD values). Discovered up to 12.2% energy savings from machine learning over different memory stream encoding formats and efficient memory placement.

Currently working on speeding up hardware choke points of canonical graph data structures and algorithms in virtual and physical memory. Findings will be pushed to the next version of Linux and likely other operating systems.

The Articulab — Human Computer Interaction Institute
Research Assistant, Aug 2017 — Dec 2017
Designed and prototyped the very first user model for a rapport-building virtual agent. Examined the current user modeling methods, and improved on user model goals and backend design.

Carnegie Mellon University — School of Computer Science
Teaching Assistant for Pricipals of Computation (15-110), Aug 2017 — Present
Led lab sections to teach students computer science principles using Python. Graded homeworks and exams, and held office hours for additional guidance.

Projects

More can be found at *williamliu.me/portfolio.html*

Facebook Discourse | Facebook Global Hackathon — Grand Prize, Nov 2017
Hardware-software integrated debate digitizer and organizer. Presented to the VPs of Technology of OculusVR, Instagram, and WhatsApp.
- Best of 14 finalists from 11 different countries.
- Coordinated a fullstack webapp, hardware stack, and Machine Learning from Google Cloud Computing.
- Used 5 communication protocols across over 8 different technologies.

ResistAR | TartanHacks — Grand Prize + Facebook's Favorite Hack, Feb 2017
Augmented reality circuit visualizer and solver on an Android App. Presented to the Deans of Computer Science and Robotics Institute at Carnegie Mellon University.
- Best of 50+ teams from Carnegie Mellon University.
- As an all Freshman team, we made extensive use of 3D Calculus and Matrix Theory to compute circuit elements and triangulate 3D graphics.

Mars Ascent Vehicle | NASA Student Launch — Second Place, Apr 2016
One mile apogee rocket + Autonomous Ground Support Equipment (AGSE) to secure payload from ground and prep rocket for launch. Presented to NASA engineers.
- 2nd Place out of 10 finalists from 100+ colleges. We were the only High School team to be invited to the competition.
- Designed and built AGSE constrained by NASA's specifications. Had limited budget and resources compared to other teams with institutional funding.
- Our payload mechanisms will be used in NASA SLS's mission to Mars.

Publications

"Experimental Characterization and Analysis of DRAM Energy Consumption and Variation" *Under Peer Review, ISCA 2018.*
G Yaglikci, R Gupta, **W Liu**, K Chang, K Kudrolli, A Agrawal, D Lee, N Chatterjee, M O'Connor, S Ghose, and O Mutlu.

"Interaction Informed Design of User Modeling for Rapport" *Under Review, UMAP 2018.*
W Liu, M Madaio, and J Cassell.