Lillian Chin

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Education

Massachusetts Institute of Technology (MIT) **June 2017**
B.S. in Electrical Engineering and Computer Science *Cambridge, MA*
Minors in Mechanical Engineering, Comparative Media Studies *GPA: 4.9/5.0*

Research Experience

MIT Computer Science & Artifical Intelligence Lab., Distributed Robotics Group **Sept. 2016 – present**
Researcher with Dr. Daniela Rus *Cambridge, MA*

- Designed chiral shear auxetic pattern in aluminum capable of creating load-bearing structures, including bridges.
- Characterized living hinge joints for aluminum through waterjetting samples and analysis of plastic living hinges
- Will be designing a self-deploying robot that uses the auxetic material for actuating foldable rigid joints.

Massachusetts Institute of Technology, Department of Mechanical Engineering **Feb. 2014 – present**
Researcher with Dr. John Hart *Cambridge, MA*

- Created machine vision algorithms in C++ for dynamic photolithography system, increasing speed of tracking, detection and encapsulation by 300% with multithreading, Kalman filters and bit plane splicing.
- Performed encapsulation experiments on liver hepatocytes in photopolymers for tissue engineering applications.
- Adapted photolithographic system to a robot arm, enabling accurate micropatterning on macro-scale objects. Improved scanning system's accuracy and designed mechanical enclosures for electronic / optical systems.
- Designed and printed NFC circuits to test capabilities of photolithography system for flexible circuits
- Analyzed performance of various particle detection and tracking algorithms in simulated and actual conditions.

MIT Media Lab, Biomechatronics Group **Jan – May 2015**
Researcher with Dr. Hugh Herr *Cambridge, MA*

- Created thin-wire electrodes and Matlab script to stimulate rat sciatic nerve and measure response
- Wrote automated particle analysis in ImageJ to measure neuron size, count and g-ratio to quantify nerve regrowth

MIT Computer Science and Artifical Intelligence Laboratory, Big Data Initiative **Sept. – Dec. 2014**
Researcher with Dr. Sam Madden *Cambridge, MA*

- Strengthened Django and Javascript frameworks of a system that allowed users to control data privacy and access
- Created REST API for the personal data storage system, enabling interfacing with iOS and Android sensors

Georgia Institute of Technology, Department of Mechanical Engineering **May 2011 – Aug. 2013**
Researcher with Dr. Michael Leamy *Atlanta, GA*

- Constructed an agent-based model in NetLogo to study collective cell movement during wound healing.
- Innovatively applied engineering principles to create model based on biological time-lapse videos of wound healing.

Emory University, Department of Pharmacology **Aug. 2011 – May 2013**
Researcher with Dr. Jennifer Hurst-Kennedy *Atlanta, GA*

- Conducted cell invasion and cell-migration assays to study the role of a deubiquitnating enzyme in cancer metastasis.
- Established a method for quantitative analysis of cell invasion data taken from time-lapse confocal video microscopy.

Westminster Schools **Jan. 2010 – May 2013**
Researcher with Dr. Chris Harrow and Dr. Shaffiq Welji *Atlanta, GA*

- Investigated locus of a conic sections foci using dynamic geometry and computer algebra software
- Analyzed behavior found by applying projective and algebraic geometry to the problem.

Work Experience

Apple **June – Aug. 2016**
iPad Hardware Systems Integration, Electrical Engineering Intern *Cupertino, CA*

- Designed schematic and PCB in Cadence for internal project board involving high-speed signals.
- Wrote TCL scripts to validate functionality of SoCs. Deployed this test suite on SMT, FATP and REL lines in China.
- Performed power validation and signal integrity measurements on low and high speed signals, including I2C and SPI.
- Wrote scripts in Lua, C++ and Python for internal eye diagram measurements & thermal experiments on battery life.

Square **June – Aug. 2015**
Electrical Engineering Intern *San Francisco, CA*

- Wrote C code for NFC card proximity detection that interfaced with 2 microcontrollers, an FPGA, ADC/DACs, and a voltage regulator. Key part of firmware needed to pass contactless payment certification
- Tuned NFC antennas with VNA and SMT rework skills, enabling proposal of new antenna design directions
- Wrote Python script to send HCI commands to Bluetooth chip, validating results with spectrum analyzer
- Supported EVT build in China, conducting failure analysis for SMT and FATP factory lines and providing translation
- Created preliminary schematics and PCB layout for new NFC board in Altium

Coursera **June – Aug. 2014**
Software Engineering Intern *Mountain View, CA*

- Wrote Javascript for on-demand certification, moving Coursera's major revenue generator to an updated platform.
- Restructured large portion of backend logic in PHP and Django for Coursera's shift to single certification and trials.
- Created internal analytics dashboard in AngularJS to monitor status of product and revenue generated.

Teaching Experience

Lab Assistant, 6.004 - Computation Structures **Sept. 2016 – present**
Guided students to a better understanding of digital circuits from the transistor level to creating their own basic CPU

Head Lab Assistant, 6.002 - Circuits and Electronics **Sept. 2015 – present**
Guided students to a better understanding of circuits by helping them debug their lab circuits, from basic ADCs to audio amplifiers. Organized and scheduled 8 different Lab Assistants, helping them with their duties by giving weekly lab tips

Tutor, InstaEDU / Chegg Tutors **Oct. 2014 – present**
Tutored online with 97% positive reviews in many subjects, including math, AP US History, Physics, Computer Science

Teacher, MIT Educational Studies Program **Nov. 2013 – present**
Taught several one-shot classes on math, games and linguistics in Splash 2013 and 2015, a 3-day program for high school students. Taught several 7-week long humanities classes for middle school and high school students for HSSP 2014 and 2015.

Mentor, Girls Who Code **June – Aug. 2015**
Led workshop on hardware and robotics to 20 high school girls to inspire them to pursue engineering. Provided one-on-one mentorship, giving advice on college, being assertive and staying interested in engineering

Awards and Honors

Tau Beta Pi Society **2016 - 2017**
National Engineering Honors Society, chosen for exemplary character and distinguished scholarship

Eta Kappa Nu Society **2016 - 2017**
National Honor Society for Electrical Engineering and Computer Science, chosen for being in the top third of the EECS class and community service to EECS department

Burchard Scholar **2016**
One of 35 students chosen from MIT for demonstrated excellence in the humanities

Kleiner Perkins Caulfield Byers (KPCB) Engineering Fellow **June – Aug. 2014**
One of 50 students selected nationally for a fellowship to develop technical skills & connect with entrepeneurial leaders.

Intel Science Talent Search Finalist **Jan. – Mar. 2013**
One of forty finalists recognized in national science research competition for original research in bioengineering.

NCWIT Award for Aspirations in Computing **2011, 2012, 2013**
National Runner Up and Georgia Affiliate Winner for leadership and aptitute in computing

Publications

1. Stevens, A., Oliver, R., Kirchmeyer, M., Wu, J., **Chin, L.**, Polsen E., Archer, C., Boyle, C., Garber, J., and Hart, J. (In Press). Conformal robotic stereolithography. *3D Printing and Additive Manufacturing.*
2. Oliver, R., **Chin, L.**, and Hart, J. (2016). Novel System for Dynamic Lithography. Manuscript in Preparation.
3. Oliver, R., Lewandowski, J., **Chin, L.**, and Hart, J. (2016). Efficient real-time detection and tracking of particles and cells in microfluidic channel and at an interface. Manuscript in Preparation.
4. Harrow, C. and **Chin, L.** (2014). Technology-Enhanced Discovery. *Mathematics Teacher*, **107**: 660 665.
5. **Chin, L.** (2013). Creating a Computer Model to Study Wound Healing. *$E = mc^2$: A High School Mathematical Science Journal*, May issue.