

LILLIAN CHIN

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EDUCATION

Massachusetts Institute of Technology (MIT)

B.S. in Electrical Engineering and Computer Science

Minors in Mechanical Engineering, Comparative Media Studies

June 2017

Cambridge, MA

GPA: 4.9/5.0

RESEARCH EXPERIENCE

MIT Computer Science & Artificial 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 Artificial 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 deubiquitinating 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

PROJECTS

For pictures and more detailed information, please go to <http://lillych.in>

2.72 - Elements of Machine Design

Spring 2016

Desktop lathe that maintained 50 micron precision even after being dropped. Won first place for highest accuracy

MIT Mobile Autonomous Systems Laboratory

Jan. 2016

Cube-stacking autonomous robot. Won first place, best software, best wiki and "most likely to be staff" award

MakeMIT 2014

Feb. 2014

Guitar-playing robot that uses solenoids to strum and a rack-and-pinion setup to fret. Won first place.

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 entrepreneurial leaders.

Intel Science Talent Search Finalist

Jan. – Mar. 2013

One of forty finalists recognized in national science research competition for original research in bioengineering.

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 = mc²: A High School Mathematical Science Journal*, May issue.