

LILLIAN CHIN

<http://lillych.in> · (404)-561-9619 · ltchin@mit.edu · 3 Ames Street, Cambridge, MA 02142

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

Westminster Schools

High School Diploma

Salutatorian

May 2013

Atlanta, GA

GPA: 101.77/100

WORK EXPERIENCE

Apple

June – Aug. 2016

iPad Hardware Systems Integration, Electrical Engineering Intern

Cupertino, CA

- Designed schematic layout and PCB board for internal board involving high-speed signals.
- Wrote TCL scripts to validate basic functionality on primary SoCs. Deployed and supported this test suite at stations on SMT, FATP and REL lines in China.
- Performed and debugged power validation and signal integrity measurements on low and high speed signals.
- Brought up and performed failure analysis on boards and full systems, working cross-functionally among product design and module teams
- Conducted thermal experiments on battery life and power output. Wrote Python scripts and suggested testing and board design changes based on results.

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 of 300 units in China with electrical engineering, embedded software and translation skills for SMT and FATP factory lines
- Provided foundation for algorithm to automatically design tamper mesh in Altium
- 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.

RESEARCH EXPERIENCE

MIT Computer Science and Artificial Intelligence Laboratory, Distributed Robotics Group

Sept. 2016 – present

Researcher with Dr. Daniela Rus

Cambridge, MA

- Will be designing a self-deploying robot that uses novel auxetic materials to interlock and create foldable rigid structures

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 and differentiate 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.

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 on the floor. Won first place in class for highest accuracy

MIT Mobile Autonomous Systems Laboratory **Jan. 2016**

Cube-stacking autonomous robot with wall-bouncing, vision tracking and color detection algorithms. Won first place, best software, best wiki and "most likely to be staff" award

6.131 - Power Electronics Laboratory **Fall 2015**

Portable audio equalizer with LED visualization

2.008 - Design and Manufacturing II **Fall 2015**

Fifty injection-molded and thermoformed yoyos with personally designed molds

6.115 - Microcontroller Project Laboratory **Spring 2015**

Simple virtual reality maze game with pressure and light sensors

MakeMIT 2015 **Feb. 2015**

Programmable gantry painter for easy ceiling tile painting

DerpSkates **Jan. 2015**

Easily strappable roller skates. Project for XFair 2015

MIT Security Survey **Sept. - Apr. 2015**

Research and activism to protest changes to dorm security. Met with President and Chancellor of MIT and worked with student dorm governments to conduct research

2.00 - Introduction to Design **Spring 2014**

Product design - sleeping bag jacket for a bikepacker. Also, foam core balloon-popping device for a competition

MakeMIT 2014 **Feb. 2014**

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

Battlecode **Jan. 2014**

AI to compete in real-time strategy game

HackMIT **Nov. 2013**

Travelive - a trip-planning website that looks at the predicted weather for your route and suggests appropriate activities

AP Computer Science AI Competitions **Spring 2013**

AI's that can compete in Iterated Prisoner's Dilemma and Tron

FIRST Robotics

2010 - 2013

4 internationally ranked robots that won 3 regionals

LEADERSHIP EXPERIENCE

MIT Undergrad. Association: Student-Administration Collaboration Committee

May 2015 - present

Chair

Cambridge, MA

- Expanded committee scope to entire institute, gaining Chancellor, faculty and administrator support
- Collaborated with several administrators and faculty, including Chancellor and department heads to improve transparency and timeliness of communications
- Coordinated efforts of 10 person undergraduate committee to effectively research current student-admin interactions and create recommendations

Free Fossils MIT

Apr. 2014 - present

President and Founder

Cambridge, MA

- Organized study breaks and trips to local museums as part of paleontology interest group

MIT Medlinks

Oct. 2013 - present

Member

Cambridge, MA

- Support fellow dorm residents' health by providing first aid medication, confidential conversations, and connection to MIT Medical resources

Society of Women Engineers

Sept. 2013 - present

Member

Cambridge, MA

- Mentored 30 middle school and high school girls through Women in Science and Engineering (WISE), exposing them to various STEM fields
- Selected for scholarship to attend Grace Hopper Conference in 2014

Westminster Robotics Teams

Jan. 2010 – May 2013

Team Captain, Lead Coder and Founder

Atlanta, GA

- Manufactured parts using Solidworks and CNC mill as member of internationally-ranked robotics team
- Constructed efficient vision-tracking autonomous mode in Java and C++; scored 50% of team's points.

TEACHING EXPERIENCE

6.002 - Circuits and Electronics

Sept. 2015 – present

Lab Assistant

Cambridge, MA

- Guided students to a better understanding of circuits by helping them debug their lab circuits, from basic ADCs to audio amplifiers

InstaEDU / Chegg Tutors

Oct. 2014 – present

Tutor

Cambridge, MA

- Tutored online with 97% positive reviews in many subjects, including mathematics, AP US History, AP English, Physics, Computer Science and College Admissions

MIT Educational Studies Program

Nov. 2013 – present

Teacher

Cambridge, MA

- 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, including one on modernist literature for HSSP 2014 and 2015.

Girls Who Code

June – Aug. 2015

Mentor

San Francisco, CA

- 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

Epsilon Camp

June – Aug. 2014

Counselor

Mountain View, CA

- Taught and mentored 47 elementary school campers at an advanced mathematics residential camp
- Tutored campers in number theory and geometry, and mediated interpersonal disputes
- Led parent workshop on inspiring girls to pursue STEM fields

Westminster Mu Alpha Theta Chapter

President / Vice-President

Aug. 2010 – May 2013

Atlanta, GA

- Organized math competitions and tutoring network as part of a national mathematics honor society
- Co-founded Math and Science Club in conjunction with tutoring program at local elementary school

Atlanta Math Circle

Co-founder

Sept. 2010 – May 2011

Atlanta, GA

- Taught interested middle school students about mathematics not commonly taught in schools, such as combinatorics and series.

PUBLICATIONS

1. Oliver, R., **Chin, L.**, and Hart, J. (2016). Novel System for Dynamic Lithography. Manuscript in Preparation.
2. 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.
3. Harrow, C. and **Chin, L.** (2014). Technology-Enhanced Discovery. *Mathematics Teacher*, **107**: 660–665.
4. **Chin, L.** (2013). Creating a Computer Model to Study Wound Healing. *E = mc²: A High School Mathematical Science Journal*, May issue.

HONORS AND AWARDS

Burchard Scholar

2016 - 2017

One of 35 students chosen from MIT for demonstrated excellence in the humanities

Winner of MIT Mobile Autonomous Systems Laboratory

Jan. 2016

Won first place, best software, best wiki and most likely to be staff for our cube-stacking autonomous robot

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.

Winner of MakeMIT Hackathon

Jan. 2014

Awarded first place for creating prototype of guitar-playing robot in 14 hours including strumming and fretting mechanism.

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 aptitude in computing

SKILLS AND ACTIVITIES

Laboratory – Basic cell-culture techniques, time-lapse video & confocal microscopy, machine shop experience, CNC mill, CNC lathe, surface mount soldering rework experience

Languages – *Fluent*: Python, Java, C/C++, L^AT_EX, Matlab, NetLogo, TCL; *Familiar*: Javascript, SQL, HTML/CSS, PHP, Bash, Chinese

Proficiencies – Git, ImageJ, Adobe Photoshop, Adobe Illustrator, Nikon Elements, Django, Jenkins, EAGLE, Altium, MasterCAM, Solidworks, Cadence

Clubs – Tech Squares, MIT Sporting Clays Association, Assassin's Guild