# Lillian Chin

http://lillych.in · (404)-561-9619 · ltchin@mit.edu

## Education

**Massachusetts Institute of Technology (MIT)**                                                **2017 - 2022 (expected)**
*PhD in Electrical Engineering and Computer Science*                                                   *Cambridge, MA*

**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*

## Work and Research Experience

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

- Designed electrically-powered soft robotic actuator based on chiral shear auxetic patterns
- Mechanically characterized force output and compliance of actuator, creating biomimetic fingers and tentacles

**Toyota Research Institute**                                                                                     **2017**
*Robotics Intern*                                                                                     *Cambridge, MA*

- Designed automated mechanical testing rigs to evaluate performance of new soft tactile sensor against simulation
- Created new silicone-based tactile skin and performed experiments on mechanical adhesion and accuracy
- Explored current tactile sensing solutions - contacting manufacturers and recreating academic prototypes

**Massachusetts Institute of Technology, Department of Mechanical Engineering**               **2014 – 2017**
*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.

**Apple**                                                                                                            **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**                                                                                                           **2015**
*Electrical Engineering Intern*                                                                     *San Francisco, CA*

- Wrote C code for NFC card proximity detection, 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
- Created preliminary schematics and PCB layout for new NFC board in Altium

## Publications

1. **Chin, L.**, Lipton, J., MacCurdy, R., Romanishin, J., Sharma, C., & Rus, D. (2018). Compliant Electric Acutators Based on Handed Shearing Auxetics. In *Soft Robotics (Robosoft), 2018 IEEE International Conference on.* IEEE, 2018. Manuscript Under Review.

2. Lipton, J., MacCurdy, R., Manchester, Z., **Chin, L.**, Celluci, D., & Rus, D. Handedness in Shearing Auxetics Creates Rigid and Compliant Structures. Revise and Resubmit at *Science*.

3. Beaudoin J., **Chin L.**, Zlotnick H., Cervantes T., Lassey S., Robinson J., Slocum A. Obstetrical Forceps with Passive Rotation and Sensor Feedback. ASME. Frontiers in Biomedical Devices, *2018 Design of Medical Devices Conference*. Accepted for Publication.

4. Stevens, A., Oliver, R., Kirchmeyer, M., Wu, J., **Chin, L.**, Polsen E., Archer, C., Boyle, C., Garber, J., and Hart, J. (2016). Conformal robotic stereolithography. *3D Printing and Additive Manufacturing*, 3(4): 226-235.

5. Harrow, C. and **Chin, L.** (2014). Technology-Enhanced Discovery. *Mathematics Teacher*, **107**: 660 665.