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 electricaly-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.

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

MIT Media Lab, Biomechatronics Group **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

Projects

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

2.72 - Elements of Machine Design **2016**
Desktop lathe that maintained 50 micron precision even after being dropped. Won first place for highest accuracy

MIT Mobile Autonomous Systems Laboratory **2016**
Cube-stacking autonomous robot. Won first place, best software, best wiki and "most likely to be staff" award

MakeMIT **2014**
Guitar-playing robot that uses solenoids to strum and a rack-and-pinion setup to fret. Won first place.

Publications

1. 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.
2. Harrow, C. and **Chin, L.** (2014). Technology-Enhanced Discovery. *Mathematics Teacher*, **107**: 660 665.