Luke Shi

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EDUCATION

Northwestern University — Sept 2016-current
Master of Science in Robotics — GPA: 4.0/4.0

University of Pennsylvania — Aug 2014-Dec 2015
Master of Science in Engineering in Materials Science

University of Illinois at Urbana-Champaign — Aug 2010-May 2014
Bachelor of Science in Materials Science and Engineering

Relevant Coursework:
> Computer Vision and Computational Photography, Embedded Systems in Robotics, Machine Dynamics, Robotic Manipulation, Introduction to Mechatronics, Statistical Pattern Recognition, Introduction to Sensor Networks

EXPERIENCE

Prof. John A. Rogers Group: University of Illinois — May 2011-May 2014
Undergraduate Researcher

- Fabricated and characterized integrated thermochromic liquid crystal/stretchable RF devices for skin diagnostics. Developed reproducible fabrication process for device substrate. Assisted in thermal imaging measurements. Efforts facilitated creation of novel imaging platform to study vitals such as blood flow and hydration. Resulted in co-authorship on publication.
- Designed, fabricated, and tested epidermal electronic devices for vitals measurement, with more functionality and mechanical robustness than previous iterations. Assisted in preliminary device design. Optimized an experiment to quantify adhesion forces of candidate encapsulant materials. End result was a multifunctional device that was robust up to 2 weeks, even in harsher environmental conditions. Resulted in co-authorship on publication.

PROJECTS

Independent Project: Northwestern University — Jan 2017-current
Graduate Student

- Designing a simulator for multiple robots to test collision avoidance, path planning, and "swarm" formation
- Seeking to build real robots to experimentally validate the simulator results
- Software: ROS, RViz, Programming Languages: Python, C/C++

ME 495 Final Project: Northwestern University — Nov 2016-Dec 2016
Team 4: Fancy Baxter

- We programmed a Baxter Research Robot to set a table for dinner, akin to fine dining arrangement
- Utilized Baxter's image processing and inverse kinematics capabilities to track, grip, and place silverware
- Hardware: Baxter SDK, Software: Python, OpenCV, Baxter API

PUBLICATIONS

- "**Multifunctional Epidermal Electronics Printed Directly onto the Skin**" *Advanced Materials*. (Feb. 2013). Co-author
- "**Epidermal Photonic Devices for Precise Skin Temperature Mapping and Thermal Property Measurement**" *Nature Communications.* (Sept. 2014). Co-author

SKILLS

- **Fabrication**: lithography (photo, nano-imprint, soft), PVD (e-beam evaporation), wet/dry etching (metal, polymer, silicon)
- **Characterization**: SEM, spectrophotometry, device characterization (I-V, IQE), DMA, profilometry
- **Software/Frameworks**: AutoCAD, ROS, Git, Gazebo, Rviz, TinyOS , Linux
- **Programming**: proficient in: MATLAB and Python, familiarity with: C/C++ and nesC
- **Interests**: medical devices, medical robotics, IoT, machine learning, artificial intelligence
- **Languages**: English, Mandarin Chinese