Luke Shi
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EDUCATION

Northwestern University — Evanston, IL
Master of Science in Robotics — Sept 2016- Dec 2017

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

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

Relevant Coursework:

Semiconductor Nanotechnology (graduate level), MEMS/NEMS Fabrication, IC Device Fabrication Lab, Introduction to Programming (Matlab/C), Engineering Entrepreneurship, Computer Vision and Computational Photography, Machine Learning, Embedded Systems in Robotics, Machine Dynamics, Robotic Manipulation

EXPERIENCE

Prof. Shu Yang Group: University of Pennsylvania — Aug 2014-May 2015
Graduate Researcher

- Collaborated with evolutionary biologists to discuss and formulate questions of "why" certain butterfly wings have such anomalous optical properties.
- Characterized butterfly wings for bioinspired broadband reflection thin film materials.
- Worked on designing and building setup to measure back-scattered reflection spectra.

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

- Growth and optical characterization of nanostructured electrochromic thin films, for tunable display applications.
- Fabricated and characterized integrated thermochromic liquid crystal/stretchable RF devices for skin diagnostics, with goals of additional functionality beyond electronics. 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.

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

CONFERENCES

- L.Shi, W. Yeo, J.A. Rogers. **"Materials Selection and Device Design for Robust Epidermal Electronics**." Materials Science and Technology Conference. Montreal, CA. October 2013.
  - 1st place in international Student Speaking Contest

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
- **Computer**: AutoCAD (basic), Matlab (proficient), Python (proficient), ROS (basic), Git (basic)
- **Interests**: medical devices, medical robotics, product development, machine learning
- **Languages**: English (fluent), Mandarin Chinese (conversant)