

# Nikolas Lamb

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## Education

### Bachelor of Science in Computer Science with Minor in Mathematics

Clarkson University

ADVISORS: DR. SEAN BANERJEE (CS) AND DR. NATASHA BANERJEE (CS)

Fall 2015 - Spring 2019

### Doctor of Philosophy in Computer Science

Lehigh University

ADVISOR: DR. MOOI CHOO CHUAH (CS)

Fall 2019 - Spring 2024 (anticipated)

## Publications

**Lamb, N., & Banerjee, N. K., & Banerjee, S. (2019).** Automated Reconstruction of Smoothly Joining 3D Printed Restorations to Fix Broken Objects. In *Proceedings of the ACM Symposium on Computational Fabrication* (p. 3). ACM.

**Lamb, N., & Chuah, M. C. (2018).** A Strawberry Detection System Using Convolutional Neural Networks. In *2018 IEEE International Conference on Big Data (Big Data)* (pp. 2515-2520). IEEE.

**Lamb, N., Banerjee, N. K., & Banerjee, S. (2018).** Programmatic 3D printing of a revolving camera track to automatically capture dense images for 3D scanning of objects. In *International Conference on Multimedia Modeling* (pp. 390-394). Springer, Cham.

Guo, L., Quant, H., **Lamb, N.**, Lowit, B., Banerjee, N. K., & Banerjee, S. (2018). Multi-camera microenvironment to capture multi-view time-lapse videos for 3D analysis of aging objects. In *International Conference on Multimedia Modeling* (pp. 381-385). Springer, Cham.

Guo, L., Quant, H., **Lamb, N.**, Lowit, B., Banerjee, S., & Banerjee, N. K. (2018). Spatiotemporal 3D models of aging fruit from multi-view time-lapse videos. In *International Conference on Multimedia Modeling* (pp. 466-478). Springer, Cham.

## Research Experience

### ENGINEERING INTERN, QUALCOMM SAN DIEGO

Summer 2019

- Quantized and optimized existing neural networks for deployment on state-of-the-art handset devices.
- Developed suite of software tools to convert networks to proprietary formats and execute networks on device.

### UNDERGRADUATE RESEARCHER, NSF FUNDED TERASCALE ALL-SENSING RESEARCH STUDIO, CLARKSON UNIVERSITY

Spring 2017 - Spring 2019

- Mentored by: Dr. Sean Banerjee (CS) and Dr. Natasha Banerjee (CS)
- Developed and published an algorithm to automatically produce smoothly-joining 3D-printable restoration parts for broken objects.
- Designed structure-from-motion based automatic 3D scanner, which is parametric and can be 3D printed, using Python, OpenSCAD and Matlab.
- Managed research group in synthesizing 957 high point density 3D models using my 3D scanner to verify proposed scanning optimizations.
- Generated reconfigurable platonic solid calibration targets in OpenSCAD, to enable quicker calibration of multi-camera systems.
- Developed a suite of Matlab tools on Github to optimize post-processing of 3D scans, which includes accelerated IO and easy scaling methods.
- Mentored the research of four undergraduate students, including two honors students, in hardware prototyping and computational fabrication.

### UNDERGRADUATE RESEARCHER, NSF FUNDED INTELLIGENT AND SCALABLE SYSTEMS, LEHIGH UNIVERSITY

Summer 2018

- Mentored by: Dr. Mooi Choo Chuah (CS)
- Designed and trained fruit detection neural network using Tensorflow and Keras that achieved 84.2% accuracy at 1.63 frames per second.
- Optimized existing neural networks for deployment on Raspberry Pi 3B single board computer, making the system distributable for under \$50.
- Collaboratively developed a Python algorithm to control a robotic picking arm using my fruit detection neural network.

## Leadership Experience

### MAKERSPACE SUPERVISOR, CLARKSON UNIVERSITY

Fall 2018 - Spring 2019

- Trained student mentors to operate and maintain 3D printers, scanners, and other equipment in University Makerspace.
- Worked with interns to structure and staff Business Plan Competition, President's Challenge Kickoff, and President's Challenge Workshop Series.
- Guided purchasing of approximately \$50,000 worth of equipment for on-campus Makerspace, and assembled and maintained this equipment.
- Assisted with and contributed to staff interviews for open department positions and student interviews for mentor positions.

## Awards

2019	<b>NSF Graduate Research Fellowship</b> , Recognizes and supports outstanding graduate students.	NSF
2019	<b>President's Challenge Grand Prize</b> , For open-source <i>Makerspace Utilization</i> project.	Clarkson University
2019	<b>Arts and Sciences Award</b> , Shows significant interdisciplinary scholarship and excellence in communication.	Clarkson University
2019	<b>Hamlin/Darraugh Award</b> , Senior who has made outstanding contribution to computer science.	Clarkson University
2018	<b>R. Gerald Bradshaw Award</b> , Junior who has made outstanding contribution to computer science.	Clarkson University