Nikolas Lamb

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Thesis Work TV Spot: https://youtu.be/RqtRuevf-rI

Education

Clarkson University — Potsdam, NY

Doctor of Philosophy in Computer Science — *2021 – 2024*

Bachelor of Science in Computer Science — *2015 – 2019*

Experience

Altec / Delsys — Natick, MA

Research Scientist — *Fall 2023 – Present*

- Led multiple DIU & DOD-funded R&D teams to develop real-time physiological sensing systems (non-contact polygraph, biofeedback tools) using radar, RGB, depth, and thermal sensors — currently deployed to end-users.
- Developing an embedded lighting+optics hardware/software camera **(Basler/Jetson)** for chest motion analysis; output real-time signals from NIR camera input via a **Python/C++/ZeroMQ** backend.
- Designed and launched ultra-low-latency, distributed multimodal capture system supporting 120Hz+ data streams from 12+ high-bandwidth cameras **(ZeroMQ/PCL)**.
- Delivered **full-stack solutions**: sensor fusion/processing, user applications, and update/QA frameworks for deployment.
- Authored 2 patents, 3 proposals, internal coding standards; mentored junior engineers.

Intern — *Summer 2023*

- Built prototype non-contact polygraph system, demoed to DIU stakeholders in San Jose, CA.
- Implemented multi-camera stereo vision and depth system for 60hz multi-perspective 3D body tracking.

Clarkson University — Potsdam, NY

Graduate Researcher — *Spring 2021 – Spring 2024*

- Developed algorithms (PhD thesis) using **Torch, Tensorflow** machine learning libraries to automate the restoration of fractured objects, published at SGP 2022, ECCV 2022, SIGGRAPH Asia (TOG) 2022, and CVPR 2023.
- Designed method to automate assembly of objects using **Kinova** robotic arm, published at ICARA 2023.
- Co-Designed a 14-sensor multi-modal video capture rig **(Python, PCL, Open3D)**, "The Cube", comprising depth, thermal, infrared, and color sensors, 4 control & image processing computers, and a data center with 300TB of hard disk space.
- Led multiple teams to collect, process, and publish on large-scale 3D datasets including 150 object dataset (CVPR 2023), 204 object dataset (ARSO 2023), and 957 object dataset.
- Mentored 4 PhD, 1 MS, and 14 undergraduate students **(Python, C/C++)**.

Lehigh University — Bethlehem, PA

Graduate Researcher — *Fall 2019 – Fall 2020*

- Developed ROS navigation stack and 6 DoF robot arm with high level task manager for Ohmni telepresence robot.
- Built VR robotic teleoperation app **(Bullet3)**, collected 40 manipulation task dataset in simulated environments.

Qualcomm — San Diego, CA

Engineering Intern — *Summer 2019*

- Quantized and optimized neural networks for deployment on state-of-the-art Qualcomm handset devices.
- Developed software API in Python to convert networks to a proprietary format for execution on Qualcomm devices.

Technical Skills

Languages: Python, C/C++, MATLAB, Bash, CUDA, LaTeX, HTML/CSS
AI/ML: Torch, Tensorflow, SciPy, Numpy, Matplotlib, Scikit-Learn, Pandas, RTM, Neptune, WanDB
Vision/Robotics: ROS, SLAM, Kinova, Basler, FLIR, VIO, Bullet3, Gazebo, MoveIt, OpenCV, Open3D, ZeroMQ, Boost, PCL
Developer Tools: Git, Docker, VS Code, NVIDIA Jetpack/Jetson, Linux, Windsurf, Copilot

Selected Publications

Lamb, Nikolas, et al. "Fantastic breaks: A dataset of paired 3d scans of real-world broken objects and their complete counterparts." Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition **(CVPR)**. 2023.

Lamb, Nikolas, et al. "Deepjoin: Learning a joint occupancy, signed distance, and normal field function for shape repair." ACM Transactions on Graphics **(TOG)** 41.6 (2022): 1-10.

Lamb, Nikolas, et al. "Deepmend: Learning occupancy functions to represent shape for repair." European Conference on Computer Vision **(ECCV)**. Cham: Springer Nature Switzerland, 2022.