CARTER SIFFERMAN

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I am a PhD candidate in Computer Science with expertise in **machine learning**, **computer vision**, and **imaging**, specializing in novel sensing algorithms for 3D image sensors, and deployment of those algorithms to real-time robot systems. I have extensive research experience (six first-author publications in at CVPR, ICCV, ICRA, IROS) and production-oriented experience from industry internships. I am seeking a full-time **scientist** or **engineer** role where I can apply my expertise to important problems.

Education

PhD Computer Science: University of Wisconsin - Madison **2022 - Present**
Thesis: 3D Imaging with Miniature Time-of-Flight Sensors. Advisors: Michael Gleicher, Mohit Gupta
Expected Graduation: December 2025

M.S. Computer Science: University of Wisconsin - Madison **2020 - 2022**

B.S. Computer Science: Drury University **2016 - 2020**

Experience

University of Wisconsin – Madison | Graduate Research Assistant | Madison, WI **Aug. 2022 - Present**
- Research areas: 3D computer vision, imaging, and robotics (see publications)
- Developed transformer-based architecture for inference from raw time-of-flight data (ICCV ’25)
- Deployed statistical and ML models to real-time robotics systems (ICRA ’24, ICRA ’25)
- Mentor to nine total undergraduates who support the lab in research and engineering

Amazon Robotics | Applied Scientist II Intern | Westborough, MA **May - August 2025**
- Defined and scoped a novel research problem, ensuring alignment with team mission, business needs
- Modified transformer-based computer vision model to improve performance on new domain
- Created evaluation plan and dataset, demonstrating improved performance over prior standard
- Contributed to production codebase, participated in code reviews, and published internal paper

CyberOptics | Machine Vision Research Intern | Minneapolis, MN **May - August 2022**
- Created, trained, and evaluated ML model for semantic segmentation of PCB; integrated model into 3D reconstruction pipeline and demonstrated significantly improved end-to-end performance
- Authored internal whitepaper detailing methodology and results of research
- Contributions were subsequently implemented into production systems

Cerner | Software Engineering Intern | Kansas City, MO **May - August 2018**

Technical Skills

Languages: Python, Java, MATLAB, JavaScript, C/C++ (Arduino)

Technologies: PyTorch, ROS, ROS 2, Docker, NumPy, OpenCV, ML Deployment (TensorRT / ONNX), Distributed ML Training (SageMaker), Linux, Git, LaTeX

First-Author Publications

Click publication names for web page; for full list, see Google Scholar.

C. Sifferman*, Y. Li*, Y. Li, M. Gleicher, M. Gupta, Y. Li. Recovering Parametric Scenes from Very Few Time-of-Flight Pixels. *International Conference on Computer Vision (ICCV) 2025*. **[* Equal contribution]**

C. Sifferman, M. Gupta, M. Gleicher. Efficient Detection of Objects Near a Robot Manipulator via Miniature Time-of-Flight Sensors. *Robotics and Automation Letters (RA-L) 2025*.

C. Sifferman, W. Sun, M. Gupta, M. Gleicher. Using a Distance Sensor to Detect Deviations in a Planar Surface. *Robotics and Automation Letters (RA-L). In Proceedings: International Conference on Robotics and Automation (ICRA) 2025*.

F. Mu*, **C. Sifferman***, S. Jungerman, Y. Li, M. Han, M. Gleicher, M. Gupta, Y. Li. Towards 3D Vision with Low-Cost Single-Photon Cameras. *Computer Vision and Pattern Recognition (CVPR) 2024*. **[* Equal contribution]**

C. Sifferman, Y. Wang, M. Gupta, M. Gleicher. Unlocking the Performance of Proximity Sensors by Utilizing Transient Histograms. *Robotics and Automation Letters (RA-L). In Proceedings: International Conference on Robotics and Automation (ICRA) 2024.*

C. Sifferman, D. Mehrotra, M. Gupta, M. Gleicher. Geometric Calibration of Single-Pixel Distance Sensors. *Robotics and Automation Letters (RA-L). In Proceedings: International Conference on Intelligent Robots and Systems (IROS) 2022*.

Z. Moore*, **C. Sifferman***, S. Tullis*, M. Ma, R. Proffitt, M. Skubic. Depth Sensor-Based In-Home Daily Activity Recognition and Assessment System for Stroke Rehabilitation. *IEEE International Conference on Bioinformatics and Biomedicine (BIBM) 2019*. **[* Equal contribution]**

Invited Talks

MIT Media Lab, Camera Culture Group. *Imaging with Miniature Time-of-Flight Sensors.* October 2024.

NASA Goddard Space Flight Center, Robotics Lunch Discussion. *3D Robot Sensing with Miniature Time of-Flight Sensors.* August 2024.

SONY, Research Award Program. *Novel Applications of Miniature Time-of-Flight SPADs.* April 2024.

Selected Awards

NSF Research Traineeship Program "INTEGRATE" Fellowship	2024 - 26
McPherson Eye Research Institute Walsh Travel Award	2024
UW-Madison CS Department Summer Research Assistantship	2021
UW-Madison CS Department First Year Scholarship	2020 - 21