Daniel Lichy

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SUMMARY

Applied researcher with a PhD in Computer Science and a strong foundation in 3D computer vision. Deep expertise in structure-from-motion, camera modeling, and inverse problems in vision. Research integrates geometric approaches and deep learning to develop principled, generalizable methods. Published in CVPR, ICCV, and 3DV; creator of open-source tools for vision. Proficient in Python, PyTorch, and C++.

CORE SKILLS

Languages: Python, C++, MATLAB
Frameworks & Libraries: PyTorch, OpenCV, COLMAP, ONNX, NumPy, SciPy
Vision & Geometry: Structure-from-Motion, Inverse Rendering, Depth Estimation, Multi-View Geometry
Tools: Git, Docker, Linux, CMake, TensorBoard, Slurm, NGC

EDUCATION

University of Maryland	College Park MD
Ph.D. in Computer Science	May 2024
Bachelor of Science in Mathematics	May 2015

WORK EXPERIENCE

Kitware	Arlington, VA
Senior R&D Engineer	August 2024 − Present

- Improved structure-from-motion pipelines for drone videos, incorporating cross-modality reconstruction from RGB and infrared imagery, with a focus on robustness to challenging camera motion and terrain.
- Developed few-shot, multi-view object detection methods for aerial video, enabling detection under low data regimes.

NVIDIA Research	Remote
Intern, Learning and Perception Research Group	June 2022 − March 2024

Supervisor: Dr. Orazio Gallo

- Designed depth estimation models that generalize across varying camera fields-of-view; published in 3DV.
- Created `nvTorchCam` (GitHub), an open-source PyTorch-based library for differentiable geometric vision that enables implementing algorithms where camera models can be interchanged without code changes.

University of Maryland	College Park, MD
Research Assistant, Department of Computer Science	August 2018 − May 2024

Advisor: Dr. David Jacobs

- Conducted research on inverse rendering of objects and human faces, resulting in publications at CVPR, ICCV, and TPAMI.
- Developed methods to recover geometry and material properties by leveraging variations in lighting and viewpoint, forming the core of PhD thesis.

National Institute of Biomedical Imaging and Bioengineering	Bethesda, MD
Postbac IRTA Fellow	May 2015 − July 2017

- Built MATLAB software for segmenting and tracking cell deformations in time-lapse microscopy, enabling quantitative analysis of mechanical changes in biological tissues.

COMMUNITY ENGAGEMENT

AI4All Project Leader	August 2019 & August 2021

- Mentored underrepresented high school students on a computer vision project using deep learning to classify leaf images.

Conference Reviewer	Since 2018

- Regular reviewer for CVPR, ICCV, and ECCV, contributing to peer review in computer vision research.

SELECTED PUBLICATIONS

- **Daniel Lichy**, Hang Su, Abhishek Badki, Jan Kautz, and Orazio Gallo. Field-of-View Agnostic Depth Estimation for Cross-Dataset Generalization. In *International Conference on 3D Vision (3DV)*, 2024. Oral presentation
- Dongxu Zhao, **Daniel Lichy**, Pierre-Nicolas Perrin, Jan-Michael Frahm, and Roni Sengupta. MVPSNet: Fast Generalizable Multi-View Photometric Stereo. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*, 2023
- **Daniel Lichy**, Roni Sengupta, and David W. Jacobs. Fast Light-Weight Near-Field Photometric Stereo. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022
- **Daniel Lichy**, Jiaye Wu, Roni Sengupta, and David W. Jacobs. Shape and Material Capture at Home. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021