

# Brevin Tilmon

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GitHub - Google Scholar - Personal Website

## EXPERIENCE

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- **Snap Inc.** 05/2022 - 12/2022  
*Research Intern, Computational Imaging Team*  
Developed state-of-the-art active stereo 3D sensor for computer vision, published results in CVPR 2023, and submitted patent. Designed software (CUDA, OpenGL, C++) and hardware (optics, electronics, 3D printing) components for embedded hardware prototype. Worked with Sizhuo Ma, Guru Krishnan, and Jian Wang. [Project Website]
- **Meta** 08/2021 - 12/2021  
*Research Intern, Reality Labs*  
Developed machine learning model in PyTorch for better selective depth sensing than classic stereo on Meta's AR/VR devices. Leveraged Meta's production machine learning infrastructure (distributed training, model quantization, large synthetic and real datasets). Submitted patent. Worked with Shuochen Su and Michael Hall.
- **NASA** 04/2021 - 08/2021  
*Research Intern, Intelligent Robotics Group*  
Improved generalization capabilities of a computational imaging microscope in development for ultra-high resolution 3D reconstruction and reflectance capture in space. Developed CUDA simulator with various BRDF models on top of NVIDIA OptiX ray tracing engine. Worked with Michael Dille and Uland Wong. [Dataset Link]
- **University of Florida** 05/2019 - Present  
*Graduate Research Assistant, Florida Optics and Computational Sensor Lab*  
Developed efficient computer vision algorithms and adaptive computational imaging systems. Designed software (C++, CUDA, Python, PyTorch) and hardware (optics, electronics, 3D printing) components for multiple embedded hardware prototypes. My advisor is Sanjeev Koppal. [Personal Website]

## PUBLICATIONS

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1. B. Tilmon, Z. Sun, S. J. Koppal, Y. Wu, G. Evangelidis, R. Zahrredine, G. Krishnan, S. Ma, and J. Wang. "Energy-Efficient Adaptive 3D Sensing". **CVPR**, 2023. [Project Website]
2. B. Tilmon and S. J. Koppal. "SaccadeCam: Adaptive Visual Attention for Monocular Depth Sensing". **ICCV**, 2021. [Project Website]
3. B. Tilmon, E. Jain, S. Ferrari and S. J. Koppal. "Fast Foveating Cameras for Dense Adaptive Resolution". **PAMI**, 2021. [Project Website]
4. B. Tilmon, E. Jain, S. Ferrari and S. J. Koppal. "FoveaCam: A MEMS Mirror-Enabled Foveating Camera". **ICCP**, 2020. [Project Website]
5. F. Pittaluga, Z. Tasneem, J. Folden, B. Tilmon, A. Chakrabarti and S. J. Koppal. "Towards a MEMS-based Adaptive LIDAR". **3DV**, 2020. [Project Website]
6. K. Henderson, X. Liu, J. Folden, B. Tilmon, S. Jayasuriya and S. J. Koppal. "Design and Calibration of a Fast Flying-Dot Projector for Dynamic Light Transport Acquisition". **Transactions on Computational Imaging**, 2020. [Project Website]

## OPEN SOURCE SOFTWARE

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- **holoCu** [GitHub]. CUDA implementation and simulator of the holographic software-defined projector developed for my CVPR 2023 paper "Energy-Efficient Adaptive 3D Sensing".
- **illumiGrad** [Github]. RGBD bundle adjustment in PyTorch. Enables easy camera calibration in the wild.

## EDUCATION

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- **University of Florida** 05/2019 - 11/2023 (Expected)  
PhD, Electrical and Computer Engineering
- **Murray State University** 08/2015 - 05/2019  
BS, Electrical Engineering, 3.8/4.0

## EXPERTISE

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- C++, CUDA, Python, PyTorch, Embedded Systems, Computer Vision, Computational Imaging, Machine Learning