

# Brevin Tilmon

Email: brevinjt@gmail.com  
Phone: 812-568-3344  
GitHub - Google Scholar - Personal Website

## EXPERIENCE

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- **Snap Inc.**, *Research Intern, Computational Imaging Team* 05/2022 - 12/2022  
Developed CUDA-accelerated active depth sensor for energy-efficient computer vision. Designed optics, 3D printing, and electronics of associated embedded linux hardware prototype running on NVIDIA Jetson Nano. Published first-author paper in CVPR 2023 and submitted patent. Released associated CUDA-OpenGL library on GitHub. Worked with Sizhuo Ma, Guru Krishnan, and Jian Wang. [Project Website]
- **Meta**, *Research Intern, Reality Labs* 08/2021 - 12/2021  
Developed adaptive depth estimation machine learning model for energy-efficient computer vision on Meta's AR/VR devices. Leveraged Meta's internal production PyTorch machine learning infrastructure (distributed training, model quantization, large synthetic and real datasets). Submitted patent. Worked with Shuochen Su and Michael Hall.
- **NASA**, *Research Intern, Intelligent Robotics Group* 04/2021 - 08/2021  
Developed a ray-traced simulator with CUDA and NVIDIA OptiX of an embedded computational microscope for ultra-high resolution 3D reconstruction and material estimation in space. Worked with Michael Dille and Uland Wong. [Dataset Link]
- **University of Florida**, *PhD Candidate (Graduate Research Assistant), FOCUS Lab* 05/2019 - Present  
Worked on GPU-accelerated computer vision and machine learning algorithms, computational photography (depth sensors, cameras, etc), and embedded linux. 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-accelerated active depth sensor developed for my CVPR 2023 paper "Energy-Efficient Adaptive 3D Sensing". Includes an efficient implementation of CUDA-OpenGL interoperability using textures.
- **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

## SKILLS

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- C++, CUDA, OpenGL, Python, PyTorch, Embedded Linux, Computer Vision, Machine Learning