

Brevin Tilmon

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GitHub - Google Scholar - Personal Website

EXPERIENCE

- **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 accompanying 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. Published papers in the top computer vision conferences and journals which led to patents and research internships at leading tech companies. My advisor is Sanjeev Koppal. [Personal Website]

PUBLICATIONS

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

- **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

- **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

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