

Brevin Tilmon

<https://btilmon.github.io>

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Research Interests

Generally my interests are in computer vision, computational imaging, and efficient software implementations of these and related fields on the GPU or CPU to unlock new capabilities. My research develops lightweight computer vision algorithms and computational imaging hardware to enable computer vision on power-constrained devices such as phones, robots and cars.

Education

University of Florida 5/2019 - 5/2023 (expected)

Ph.D. Electrical and Computer Engineering

Advisor: Sanjeev Koppal

Murray State University 8/2015 - 5/2019

B.S. Engineering Physics

Experience

Snap Inc. 5/2022 - 11/2022

Research Intern, Computational Imaging Team

Managers: [Sizhuo Ma](#), [Jian Wang](#) and [Guru Krishnan](#)

Submitted patent and paper to CVPR 2023 on computational imaging project. Topics include structured light, optics, C++/CUDA.

Meta 8/2021 - 12/2021

Research Intern, Reality Labs

Managers: [Shuochen Su](#) and [Michael Hall](#)

Developed machine learning software for adaptive depth sensing on AR/VR devices. Submitted patent based on results. Shipped code and models to production for further improvements after internship.

NASA Ames Research Center 5/2021 - 8/2021

Research Intern, Intelligent Robotics Group

Managers: [Michael Dille](#) and [Uland Wong](#)

Improved 3D reconstruction capabilities of a computational microscope intended for remote material understanding in space. Developed a CUDA simulator of the microscope to benchmark 3D reconstruction algorithms such as multi view stereo and photometric stereo. Dataset from the simulator can be found [here](#).

University of Florida 5/2019 - Present

Graduate Research Assistant, Florida Optics and Computational Sensor Lab

Advisor: [Sanjeev Koppal](#)

Developing lightweight computer vision algorithms and computational imaging hardware to enable computer vision on power-constrained devices.

Publications

B. Tilmon and S. J. Koppal. "SaccadeCam: Adaptive Visual Attention for Monocular Depth Sensing". ICCV, 2021. [Paper](#), [Code](#), [Website](#).

- B. Tilmon, E. Jain, S. Ferrari and S. J. Koppal. “Fast Foveating Cameras for Dense Adaptive Resolution”. **PAMI**, 2021. [Paper](#), [Code](#), [Website](#).
- B. Tilmon, E. Jain, S. Ferrari and S. J. Koppal. “FoveaCam: A MEMS Mirror-Enabled Foveating Camera”. **ICCP**, 2020. [Paper](#), [Code](#), [Website](#).
- F. Pittaluga, Z. Tasneem, J. Folden, B. Tilmon, A. Chakrabarti and S. J. Koppal. “Towards a MEMS-based Adaptive LIDAR”. **3DV**, 2020. [Paper](#), [Website](#).
- 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. [Paper](#), [Website](#).

Open Source Software

illumiGrad [\[GitHub\]](#)

PyTorch-abstracted online camera calibration for RGBD cameras

Patents

B. Tilmon, S. Su, M. Hall. “Efficient Dynamic Occlusion based on Stereo Vision”. Submitted.

S. J. Koppal, Z. Tasneem, D. Wang, H. Xie, B. Tilmon. “Fast Foveation Camera and Controlling Algorithms”. US16844597, 2020.

Awards

National Science Foundation Graduate Research Fellowship Honorable Mention	2021
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Graduate School Preeminence Award, University of Florida Selective fellowship for competitive PhD applicants.	2019 - 2024
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Jesse & Deborah Jones Endowment Scholarship, Murray State University Merit scholarship covered housing and partial tuition.	2015 - 2019
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