

# Brevin Tilmon

<https://btilmon.github.io>

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## Education

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**University of Florida**

5/2019 - Present

Ph.D. Electrical and Computer Engineering

**Murray State University**

8/2015 - 5/2019

B.S. Engineering Physics

## Experience

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**Snap Inc.**

5/2022 - 11/2022

**Research Intern, [Computational Imaging Team](#)**

Submitted patent and paper to leading computer vision conference on computational imaging project. Topics include structured light, optics, CUDA/C++.

**Meta**

8/2021 - 12/2021

**Research Intern, [Reality Labs](#)**

Improved machine learning based depth sensing capabilities on Meta AR/VR devices compared to classic stereo. 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](#)**

Improved 3D reconstruction capabilities of a computational microscope intended for remote material understanding in space. Developed a simulator of the microscope on top of NVIDIA OptiX CUDA-based rendering engine to benchmark 3D reconstruction algorithms such as neural radiance fields, 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](#)

My PhD work develops passive and active adaptive computational imaging sensors that either boost energy efficiency or selectively increase resolution on regions of interest more than what is possible with conventional sensors. These sensors improve various applications across computer vision and machine learning.

## Publications

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

B. Tilmon, E. Jain, S. Ferrari and S. J. Koppal. "Fast Foveating Cameras for Dense Adaptive Resolution". **PAMI**, 2021. [Website](#).

B. Tilmon, E. Jain, S. Ferrari and S. J. Koppal. "FoveaCam: A MEMS Mirror-Enabled Foveating Camera". **ICCP**, 2020. [Website](#).

F. Pittaluga, Z. Tasneem, J. Folden, B. Tilmon, A. Chakrabarti and S. J. Koppal. "Towards a MEMS-based Adaptive LIDAR". **3DV**, 2020. [Website](#).

K. Henderson, X. Liu, J. Folden, B. Tilmon, S. Jayasuriya and S. J. Koppal. "Design and Calibra-

tion of a Fast Flying-Dot Projector for Dynamic Light Transport Acquisition”. **Transactions on Computational Imaging**, 2020. [Website](#).

## Open Source Software

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**illumiGrad** [\[GitHub\]](#)

PyTorch implementation of local bundle adjustment for RGBD cameras.

## Patents

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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

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