Brevin Tilmon

Goal Apply my academic and industry background spanning software and hardware co-design of computational imaging, computer vision, and machine learning systems.

Personal `Personal Website`, `Github`, `Google Scholar`
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Education

University of Florida 05/19-12/23(Expected)
Ph.D. Electrical and Computer Engineering

Murray State University 08/15-05/19
B.S. Electrical Engineering

Experience

Snap Inc. 05/22-12/22
Research Intern, Computational Imaging Group
Managers: Jian Wang, Sizhuo Ma, Guru Krishnan
Developed state-of-the-art energy-efficient active stereo 3D sensor for computer vision. Designed hardware (optics, electronics, 3D printing) and software (CUDA, OpenGL, C++) components for self-contained and mobile hardware prototype. Published results in CVPR 2023 and submitted patent. `[Project Website]`

Meta 08/21-12/21
Research Intern, Reality Labs
Managers: Shuochen Su, Michael Hall
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.

NASA 05/21-08/21
Research Intern, Intelligent Robotics Group
Managers: Uland Wong, Michael Dille
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. `[Dataset Link]`

University of Florida 05/19-Present
Graduate Research Assistant, Florida Optics and Computational Sensor Lab
Advisor: Sanjeev Koppal
Developed computer vision algorithms and computational imaging systems for efficient computer vision applications. Designed hardware (optics, electronics, 3D printing) and software (C++, CUDA, Python, PyTorch) components for multiple compact real-time computational imaging hardware prototypes. `[Personal Website]`

Publication

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]`

Software

1. **holoCu** `[GitHub]`. CUDA implementation and simulator of the holographic projector developed for my CVPR 2023 paper "Energy-Efficient Adaptive 3D Sensing".
2. **illumiGrad** `[Github]`. PyTorch bundle adjustment for RGBD cameras.

Skills Computer Vision, Computational Imaging, Machine Learning, Optics, Electronics
C++, Python, CUDA, PyTorch