Anthony Bisulco

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Education

University of Pennsylvania — *Philadelphia, PA*
PhD Candidate in Electrical and Systems Engineering (4.0/4.0) — *Sept. 2021 - Present*
Advisors: Kostas Daniilidis + Vijay Kumar **Research Topic:** Perceptual Representations Learning
Classes: Theoretical and Computational Neuroscience, Linear Systems, Elements of Probability Theory

Cornell University — *New York, NY*
Master of Engineering in Electrical and Computer Engineering (3.97/4.3) — *Sept. 2018 - May 2019*
Classes: Autonomous Systems, Computer Vision, Distributed Systems, Statistical Signal Processing

Northeastern University — *Boston, MA*
Bachelor of Science in Electrical and Computer Engineering (3.97/4) — *Sept. 2014 - May 2018*
Advisors: Jose Martinez-Lorenzo + Hanumant Singh
Activities: Department of Homeland Security Student Leadership Council, Institute of Electrical and Electronics Engineers, Northeastern Program for Teaching Undergraduates, Tau Beta Pi, and Eta Kappa Nu
Classes: Machine Learning and Pattern Recognition, Biomedical Imaging, Robotics Sensing and Navigation

Experience

Meta Realty Labs Research, Sensors and Systems — *Redmond, WA*
May 2024 - Present

Samsung Artificial Intelligence Center New York — *New York, NY*
Researcher, Advisors: Daniel D. Lee, Volkan Isler & Sebastian Seung — *July 2019 - Aug. 2021*
- Designed motion understanding system for objects **moving up to 23** $\frac{m}{s}$ using neuromorphic vision sensors
- Developed a low complexity pedestrian detection system for **neuromorphic vision sensors** and implemented a low complexity filter on a FPGA using Chisel and a **Binary Neural Network** on a microcontroller
- Implemented hyperparameter tuning solution for QXplore: a novel reinforcement learning algorithm
- Developed center-wide infrastructure including code management, cluster management, and networking

Sensing, Imaging, Control and Actuation Laboratory — *Boston, MA*
Researcher, Next generation sensing methods — *Sept. 2014 - May 2018*
- Developed an FPGA control system for a **multiple-input multiple-output** radar system with 400 channels
- Implemented **simulated annealing** and **compressive sensing** methods for a coded imaging system
- Implemented a fused millimeter/infrared imaging system for target position tracking validation

Google Research and Machine Intelligence — *Mountain View, CA*
Intern, AIY team designing AI+DIY devices, Manager: Kai Yick — *July 2017 - Dec. 2017*
- Performed transfer learning in **Tensorflow** to retrain models for speech and image recognition (MobileNet)
- Developed software for AIY vision kit, an on-device **neural network** accelerator for computer vision
- Assisted in the rapid prototyping/full scale manufacturing process of developing units
- Traveled **internationally/nationally** for product demonstrations and marketing AIY kits to distributors

European Organization for Nuclear Research (CERN) — *Meyrin, Switzerland*
ATLAS Systems Engineer Fellow, High resolution calorimeter — *Sep. 2016 - Dec. 2016*
- Developed array synthesis algorithms for multi-anode **photomultiplier tubes**, improving detector resolution
- Designed and 3D printed a fiber light guide for 85% increased sensor coverage of the photomultiplier tube

Massachusetts Institute of Technology Lincoln Laboratories — *Lexington, MA*
Summer Researcher, Active Optical Systems — *May 2015 - Aug. 2015*
- Adapted MATLAB image processing algorithms to an **FPGA** for a UAV Micro-LIDAR
- Developed and implemented a configurable FPGA moving average filter for Avalanche Photo Diodes (APD)

Selected Publications

- Z. Wang, F. Cladera, **A. Bisulco**, D. Lee, C. J. Taylor, K. Daniilidis, M. A. Hsieh, D. D. Lee and V. Isler, "Ev-catcher: High-speed object catching using low-latency event-based neural networks," IEEE-RAL, July. 2022
- **A. Bisulco**, F. Cladera, V. Isler and D. Lee, "Fast Motion Understanding with Spatiotemporal Neural Networks and Dynamic Vision Sensors," IEEE-ICRA, May. 2021
- **A. Bisulco**, F. Cladera, V. Isler and D. D. Lee, "Near-chip Dynamic Vision Filtering for Low-Bandwidth Pedestrian Detection," IEEE-ISVLSI **Best Paper Award**, July 2020
- A. Molaei, **A. Bisulco**, L. Tirado, A. Zhu, D. Cachay, A. Ghanbarzadehdaghe Dagheyan, J.A. Martinez-Lorenzo, "3D Printed E-Band Compressive Horn Antenna for High-sensing-capacity Imaging Applications," IEEE Antennas and Wireless Propagation Letters, July 2018

Skills

Programming/Software: Python, Chisel, C++, MATLAB, Verilog, SolidWorks, ROS/ROS2, LCM, Pytorch, Slurm
Technical Skills: • Robotics • Machine Learning • FPGA/Microcontroller • Remote Sensing • Programming • Signal Processing • Data Analytics • Compressive Sensing • Radar • GPU Computing • Computer Vision