

Dennis Melamed

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Experience

- Kitware, Senior Research & Development Engineer** Aug 2021 – Present
- Led proposal efforts to customers including NGA, Space Force, and NASA. Secured >\$2 million in awarded proposals.
 - Developed building damage detection systems for remote sensing (EO/SAR), reducing training data needs 1000x.¹
 - Designed deconfliction framework for multiple object detectors using prior information and detector trust metrics.
 - Architected & developed inspection tool (as lead of 5 person team) for localizing aircraft defects to 5 cm accuracy.
 - Developed novel pose estimation algorithms for event camera star tracking, achieving 20 arcsecond accuracy.²⁻⁴
- Nextdroid Robotics, Software Intern** June 2018 – Aug 2018
- Deployed sensorless high-precision motor speed control for subsea robotic platform
 - Co-developed high-accuracy image processing for aerial scene understanding
- National Instruments, Software Intern** June 2017 – Aug 2017
- Implemented network interfaces for measurement device drivers to maintain stability on newer platforms
 - Developed encryption systems to allow first-in-company secure device firmware/driver communication
- Robotic Sensor Networks Lab, University of Minnesota, Research Assistant** Feb 2015 – May 2019
- Developed GPS-denied micro-UAV platform for agriculture using ROS, C, and V-REP simulation

Education

- M.S. in Robotics** Aug 2019 – July 2021
Carnegie Mellon University, Prof. Kris Kitani
Pittsburgh, PA
- Thesis: Learnable Spatio-Temporal Map Embeddings for Deep Inertial Localization^{5,6}
- B.Sci. in Computer Engineering, Summa Cum Laude with Distinction** Sept 2015 – May 2019
University of Minnesota, Prof. Volkan Isler
Minneapolis, MN
- Thesis: Indoor Micro-UAV Navigation with Minimal Sensing (Profs. Volkan Isler & Derya Aksaray)

Skills

Programming Languages: Python, C++, Embedded C, MATLAB, Java
Robotics Tools: Robotics Operating System (ROS), Gazebo, V-REP
Frameworks/Libraries: Pytorch, OpenCV, scikit-learn, ONNX, Triton, DVC, NanoSatellite Protocol (NSP)
Other Tools: Git, Linux, Latex, Windows Kernel, Blender, QGIS, Gitlab CI/CD
Languages: English (native), Russian (native), Spanish (proficient)

Publications

- Uncovering Bias in Building Damage Assessment from Satellite Imagery**
Melamed, D.; Johnson, C.; Gerg, I. D.; Zhao, C.; Blue, R.; Hoogs, A.; Clipp, B.; Morrone, P.
IGARSS 2024 - 2024 IEEE International Geoscience and Remote Sensing Symposium, 2024
- EBS-EKF: Accurate and High Frequency Event-based Star Tracking**
Reed, A. W.; Hashemi, C.; Melamed, D.; Menon, N.; Hirakawa, K.; McCloskey, S.
Proceedings of the 2025 Computer Vision and Pattern Recognition (CVPR) Conference, 2025
- Centroiding Point-Objects with Event Cameras**
Hashemi, C.; Melamed, D.; McCloskey, S.
Proceedings of the 2025 IEEE International Conference on Computation Photography (ICCP), 2025
- Quantifying Accuracy of an Event-Based Star Tracker via Earth's Rotation**
Melamed, D.; Hashemi, C.; McCloskey, S.
Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) Workshops, 2025
- Learnable Spatio-Temporal Map Embeddings for Deep Inertial Localization**
Melamed, D.; Ram, K.; Roy, V.; Kitani, K.
2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022
- IDOL: Inertial Deep Orientation-Estimation and Localization**
Sun, S.; Melamed, D.; Kitani, K.
Proceedings of the AAAI Conference on Artificial Intelligence, 2021