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

(1) **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

(2) **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

(3) **Centroiding Point-Objects with Event Cameras**
Hashemi, C.; Melamed, D.; McCloskey, S.
Proceedings of the 2025 IEEE International Conference on Computation Photography (ICCP), 2025

(4) **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

(5) **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

(6) **IDOL: Inertial Deep Orientation-Estimation and Localization**
Sun, S.; Melamed, D.; Kitani, K.
Proceedings of the AAAI Conference on Artificial Intelligence, 2021