Dr. Kevin Decker

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Highlights: 2D and 3D Computer Vision, Merging research with application, Multidisciplinary technical expertise
Technologies: Python, PyTorch, OpenMMLab, Plotly, Docker, Linux, Git, Tensorflow, Keras, LaTeX, C++, CUDA

EXPERIENCE

Senior AI/ML Researcher
Riverside Research | Fairborn, OH | June 2022 – Present

- Pioneered the development of neural network models leveraging 3D point-convolutions for spatial-temporal analysis of picosecond-duration events from single-photon counting camera data.
- Designed and implemented a novel algorithm for 3D trajectory prediction by modeling possible trajectories as a temporally directed graph and identifying probable solutions using Dijkstra's algorithm, achieving state-of-the-art performance.
- Fine-tuned Detection Transformer (DETR) for object detection on panchromatic imagery, employing transfer learning to significantly improve mAP and reduce false positives over the existing solution.
- Applied Meta's Segment Anything foundational model for multi-object detection, image segmentation, and tracking in full-motion video data as part of an IRAD effort, greatly enhancing the customer's understanding and access to advanced computer vision technologies.
- Contributed to the development of a neural network regression model for predicting the motion trajectory of objects from radar-based imagery. Used CycleGAN to transfer real-world data style to simulated data, increasing useable data for training.

AI/ML Researcher
Defense Engineering Corp. | Beavercreek, OH | January 2020 – June 2022

- Conducted research on multimodal fusion architectures, developing pixel and point convolution-based neural networks for semantic segmentation of lidar and hyperspectral imagery.
- Contributed to the development of a multimodal EO and lidar fusion network for semantic segmentation of the Dayton Annotated Laser Earth Scan (DALES) dataset; results were published in the 2021 IEEE AIPR Workshop.
- Created an advanced image processing software suite for lidar systems, featuring modular frameworks for calibration, statistical image processing, and AI-enhanced analysis pipelines.

AI/ML Engineer
InfoSciTex | Beavercreek OH | September 2018 – January 2020

- Developed and optimized CNN-based automatic target recognition models for lidar data, achieving robust classification performance under varying noise conditions; results were published in the Military Sensing Symposium Active EO conference.
- Designed a collaborative decision-making tool that ingests user opinions, extracts features using TF-IDF on n-grams, and applies K-Means clustering to identify and highlight common themes.
- Developed software to integrate data pipelines into real-time battlefield simulation, enabling automated generation and collection of labeled datasets for training and validating C4ISR machine learning models.

Software Engineer
UES Inc | Beavercreek OH | May 2015 – September 2018

- Designed, implemented, and deployed the Autonomous Research System (ARES) framework for autonomous experimentation in Carbon Nanotube synthesis, incorporating high-throughput analysis; results were published in npj Computational Materials.
- Applied the ARES framework to inkjet printing for microfluidics and utilized OpenCV Canny edge detection to measure printing results with precision.
- Developed a microscope stage calibration algorithm using image cross-correlation to achieve accurate alignment for experimental workflows.

EDUCATION

Ph.D. in Computer Science
Air Force Institute of Technology | WPAFB, OH | January 2017 – December 2024

- Dissertation: "Hyperspectral and Lidar Fusion and the Evaluation of Sampling Methodologies in Remote Sensing"

MSc. in Computer Science

BA in Computer Science
University of Cincinnati | Cincinnati, OH | May 2009 – May 2015

PUBLICATIONS

Earlier works on request, or LinkedIn profile, or in text above

- K. T. Decker and B. J. Borghetti. "Composite Style Pixel and Point Convolution-Based Deep Fusion Neural Network Architecture for the Semantic Segmentation of Hyperspectral and Lidar Data". Remote Sensing 2022, Vol. 14, Page 2113, 14(9):2113, apr 2022.
- K. T. Decker and B. J. Borghetti. "Hyperspectral Point Cloud Projection for the Semantic Segmentation of Multimodal Hyperspectral and Lidar Data with Point Convolution-Based Deep Fusion Neural Networks". Applied Sciences 2023, Vol. 13, Page 8210, 13(14):8210, jul 2023.
- [In Submission] K. T. Decker, and B. J. Borghetti. "A survey of sampling methods for hyperspectral remote sensing: Addressing bias induced by random sampling". Remote Sensing, 2025.