

Armin Hadzic

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Experience

Senior AI Research Scientist

2021-Present

DZYNE TECHNOLOGIES INC.

Fairfax, VA

- Orchestrated autonomous agentic (Claude, Gemini, ChatGPT) workflows via OpenCode to develop a semantic video search application, cross-view localization, and physics simulation.
- Developed multimodal fusion models on 5TB of videos for a multi-org initiative (Rutgers, WashU, UKy); boosting F1 from 52% to 75% and securing \$500k in follow-on for \$2.3M program (WACV [1]).
- Designed a multimodal transformer with contextual representations for traffic modeling; exceeding the prior state-of-the-art (SOTA) by 7% (ECCV [2]).
- Automated multi-resolution image processing and dataset construction (> 100k samples), resulting in a \$1M extension after achieving 78% segmentation F1.
- Developed a generative approach for segmentation super-resolution that reached 88% accuracy (WACV [3]).
- Co-led 9 proposal efforts across an 11-person team; securing \$6.3M to support AI R&D.

AI Research Scientist

2020-2021

JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LAB

Laurel, MD

- Trained and deployed vision models at scale (Docker/Dask/Slurm) for the Climate Trace initiative; delivered CO₂ emissions estimates at global scale via Microsoft Planetary Computer (CVPRW [10]).
- Developed adversarial de-biasing techniques to improve AI fairness in medical data/imaging applications by 20% (MICCAI [4], Neural Computation [9]).
- Optimized multi-agent swarm control; reduced cooperative capture time by 25s for multiple rewards (Array [8], ISEC [5]).

Research Assistant

2017-2020

UNIVERSITY OF KENTUCKY COMPUTER VISION LAB

Lexington, KY

- Built a multimodal dataset (LiDAR, imagery) and architecture that outperformed the prior SOTA by 13% (CVPRW [11]).
- Collaborated with CDC, UNHCR, and IOM on population estimation for resource allocation, reducing error to 7% (IGARSS [6]).
- Led the development of a safety-focused, perception-driven, navigation system (WACV [7]).

Software Development Engineer

2015-2018

BELCAN ENGINEERING GROUP INC.

Lexington, KY

- Automated jet engine diagnostics and streamlined a legacy C++/Make cross-platform build system, saving \$100k and reducing compilation time by 60%.

Personal Projects

- *CharacterSheet: Agentic Character Design*: Developed a Generative AI application integrating LangGraph, FastAPI, and Google Gemini to transform character references into animation model sheets via an interactive chatbot.
- *Visual Content Moderation*: Engineered a dockerized computer vision pipeline with accelerated training and inference.

Technical Skills

Languages	Python, C/C++, Java, Verilog, L ^A T _E X, Shell
AI/ML	PyTorch, Agentic AI, LLMs, Multimodal, NLP, BoTorch, Diffusion, Reinforcement Learning
Computer Vision	Generative AI, 3D Vision, Segmentation, Localization, Pose, Depth, Remote Sensing
Infrastructure	AI Orchestration, FastAPI, Data Processing, Training, Slurm, MLflow, Docker, AWS

Education

University of Kentucky

2018-2020

Master of Science in Computer Science, GPA – 4.0, Outstanding MS Student Award

Advisor: Nathan Jacobs

University of Kentucky

2009-2016

BS in Computer Engineering & BS in Electrical Engineering, GPA – 3.8

Magna Cum Laude

Service & Recognition

- Best Paper ISEC 2022 and CVPRW EARTHVISION 2021; Outstanding Reviewer CVPR 2024 & 2025.
- Reviewer 2022-2026: CVPR, ECCV, ICCV, ICLR, NeurIPS, WACV, and CVPRW EARTHVISION.

Publications

Conference Papers

- [1] Connor Greenwell, Jon Crall, Matthew Purri, Kristin Dana, Nathan Jacobs, Armin Hadzic, Scott Workman, and Matt Leotta. "WATCH: Wide-Area Terrestrial Change Hypercube". In: *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision*. (**WACV**). 2024, pp. 8277–8286.
- [2] Scott Workman and Armin Hadzic. "Probabilistic Image-Driven Traffic Modeling via Remote Sensing". In: *European Conference on Computer Vision*. (**ECCV**). 2024.
- [3] Scott Workman, Armin Hadzic, and M. Usman Rafique. "Handling Image and Label Resolution Mismatch in Remote Sensing". In: *IEEE Winter Conference on Applications of Computer Vision*. (**WACV**). January 2023.
- [4] Haolin Yuan, John Aucott, Armin Hadzic, William Paul, Marcia Villegas de Flores, Philip Mathew, Philippe Burlina, and Yinzhi Cao. "EdgeMixup: Embarrassingly Simple Data Alteration to Improve Lyme Disease Lesion Segmentation and Diagnosis Fairness". In: *International Conference on Medical Image Computing and Computer-Assisted Intervention*. (**MICCAI**). October 2023, pp. 374–384.
- [5] Elise Buckley, Joseph D Monaco, Kevin M Schultz, Robert Chalmers, Armin Hadzic, Kechen Zhang, Grace M Hwang, and M Dwight Carr. "An interdisciplinary approach to high school curriculum development: Swarming Powered by Neuroscience". In: *Proceedings 2022 IEEE Integrated STEM Education Conference*. (ISEC) **Best Paper Award**. March 2022.
- [6] Armin Hadzic, Gordon Christie, Jeffrey Freeman, Amber Dimer, Stevan Bullard, Ashley Greiner, Nathan Jacobs, and Ryan Mukherjee. "Estimating Displaced Populations from Overhead". In: *IEEE International Geoscience and Remote Sensing Symposium*. (IGARSS). September 2020.
- [7] Weilian Song, Scott Workman, Armin Hadzic, Xu Zhang, Eric Green, Mei Chen, Reginald Souleyrette, and Nathan Jacobs. "FARSA: Fully Automated Roadway Safety Assessment". In: *IEEE Winter Conference on Applications of Computer Vision*. (**WACV**). March 2018.

Journal Articles

- [8] Armin Hadzic, Grace M Hwang, Kechen Zhang, Kevin M Schultz, and Joseph D Monaco. "Bayesian optimization of distributed neurodynamical controller models for spatial navigation". In: *Array* (2022), p. 100218.
- [9] William Paul, Armin Hadzic, Neil Joshi, Fady Alajaji, and Philippe Burlina. "TARA: Training and Representation Alteration for AI Fairness and Domain Generalization". In: *Neural Computation* (2022), pp. 1–38.

Workshop Papers

- [10] Ryan Mukherjee, Derek Rollend, Gordon Christie, Armin Hadzic, Sally Matson, Anshu Saksena, and Marisa Hughes. "Towards Indirect Top-Down Road Transport Emissions Estimation". In: *IEEE/ISPRS CVPR Workshop: Large Scale Computer Vision for Remote Sensing Imagery*. (EARTHVISION) **Best Paper Award**. June 2021.
- [11] Armin Hadzic, Hunter Blanton, Weilian Song, Mei Chen, Scott Workman, and Nathan Jacobs. "RasterNet: Modeling Free-Flow Speed using LiDAR and Overhead Imagery". In: *IEEE/ISPRS CVPR Workshop: Large Scale Computer Vision for Remote Sensing Imagery*. (EARTHVISION). June 2020.