Jared Macshane

PhD Student in Computer Science

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Education

2023–Present	**PhD Computer Science**, *University of California, Irvine*
2020–2022	**Master of Computer Science**, *California State University San Marcos*
2015–2017	**Bachelor of Mathematics**, *University of California, Santa Barbara*

Research Experience

2023–Present — **Graduate Research**, *University of California, Irvine*
- Developing and architecting a Digital Twin for disaster resilience
- Reducing communication overhead in Split Computing
- Implementing supervised compression techniques for applications
- Developing progressive inference models

2023–Present — **Graduate Student Mentor**, *Zotbins Undergraduate Research Project*, University of California, Irvine
- Mentor undergraduate research team developing distributed smart waste bins
- Guide project design, goal setting, and implementation strategy
- Focus on improving waste diversion rates through IoT and data analytics

2021–2023 — **Graduate Research Assistant**, *California State University San Marcos*
- Developed VR tracking method for Aruco Markers, funding from NSF
- Tested custom 3D prints for active tracking
- Mentored undergraduate students through development of a object detection model
- Integration of model into a usable pipeline

2022 — **Master's Thesis**, *Using Growing Self-organizing Maps to Construct Trail Networks Using Public GPS Data*
- Developed novel learning algorithm to model hiking trail networks from raw GPS data
- Growing Self-organizing Map, Edge inference rules, K-d trees
- Best Paper Award

2021–2021 — **Research Fellow**, *San Diego Zoo Wildlife Alliance - Conservation Lab*
- Developed computer vision framework (coined cougarvision) for animal detections
- Utilizing Object Detector and Image Classifier models
- Triggered alerts from cell camera images and live video feeds (multithreading)

Other Experience

2023–Current — **Teaching Assistant**, *University of California, Irvine*
- Hosted lab sections with one-on-one code guidance
- Prepared and presented lecture slides

2022–2022 — **Machine Learning Consultant**, *Ecorithms*
- Selected and trained semantic segmentation models on custom datasets
- Aided in deployment of inference endpoint

Publications

Gow, Sean, et al. "Miniaturization and geometric optimization of SteamVR active optical trackers." Optical Architectures for Displays and Sensing in Augmented, Virtual, and Mixed Reality (AR, VR, MR) IV. Vol. 12449. SPIE, 2023.

Macshane, Jared, and Ali Ahmadinia. "AI Assisted Trail Map Generation based on Public GPS Data." 2023 Systems and Information Engineering Design Symposium (SIEDS). IEEE, 2023.

Notable Course Projects

Wildfire Supervised Compression
CS 256 Systems and ML
- Trained a ResNet wildfire image classifier
- Used Knowledge Distillation to train an entropy-based image compressor

Generative Fire Modeling
CS 274E Deep Generative Models
- Developed a novel Conditional Variational Autoencoder to predict fire progression using evironmental data

Progressive Inference
CS 230 Distributed Systems
- Implemented and analyzed adding early exits to split computing and measuring accuracy-latency trade-off

Specialized Skills

Programming Languages: Python, C++

Tools: OpenCV, Tensorflow, PyTorch, OpenMMLab, TSAI, AWS, Google Cloud

Writing: LaTeX, Word, Powerpoint