David Robinson

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EDUCATION

University of Central Florida — May 2026
Bachelor of Science in Computer Science, Intelligent Robotic Systems Minor — *3.94 GPA*

EXPERIENCE

Undergraduate Researcher — August 2024 – Present
UCF Center for Research in Computer Vision — *Orlando, FL*
- Optimizing state-of-the-art 3D pose estimation models to extract joint angles for quantitative stroke mobility analysis.
- Benchmarked neural networks (R3D, R2Plus1D, Video Swin Transformer, Video MViT, MotionBERT, PoseConv3D, MS-G3D) for movement analysis, achieving up to **90.18%** accuracy on the StrokeVision-Bench dataset.

Machine Learning Engineer — March 2025 – May 2025
Contract — *Remote*
- Designed and trained a neural network using Embedding-LSTM modules and an MLP, achieving **90.7%** accuracy and **93.59%** precision on a custom dataset of **4,000** labeled string pairs.
- Deployed an ONNX-optimized model through a Flask API, improving inference speed by 4x and supporting efficient batch predictions.

Software Engineering Intern — August 2023 – July 2024
Dynamic Animation Systems — *Orlando, FL*
- Fine-tuned the Mistral-7B LLM with Hugging Face's Transformers and PEFT libraries to generate simulation scenario files compliant with an XSD schema.
- Designed an ontology for simulation hosting, enabling deployment in on-premises and cloud environments using Docker and Kubernetes, with support for AWS and GCP.

PUBLICATIONS

StrokeVision-Bench: A Multimodal Video and 2D Pose Benchmark for Tracking Stroke Recovery

David Robinson, Animesh Gupta, Rizwan Qureshi, Qiushi Fu, Mubarak Shah

Accepted to IEEE MLSP 2025

PROJECTS

BirdsEye | *PyTorch, YOLOv11, Flask, OpenCV, NumPy, FFmpeg*
- Built a traffic-camera analysis system to estimate lane-level vehicle speeds using YOLOv11 and real-time video streams.
- Ingested live Florida Department of Transportation HLS feeds through FFmpeg, buffering and decoding frames for low-latency inference.
- Detected vehicles with YOLOv11, pretrained on COCO, compared bounding boxes across frames to track moving vehicles, and computed lane-level vehicle speeds by measuring crossing times over defined road segments.

Accelify | *PyTorch, MongoDB, Pandas, NumPy, Scikit-Learn, Flask, Python*
- Developed a PyTorch recommender system for ServiceNow accelerators on a dataset of **2,000** company-product pairs, reducing loss by **95.8%** and deployed with Flask for inference.
- Built a recommendation dataset using TF-IDF and co-occurrence scores on product usage data with **150+ entries**.

BookMate | *PyTorch, Selenium, NextJS 13, Flask, Python, R, YOLOv8*
- Trained the **YOLOv8** model for identifying ISBNs, achieving **98.3 mAP** on a combined barcode dataset sourced from multiple public datasets.
- Created a PyTorch regression model to determine optimal selling prices for books, reaching **3.9 MSE Loss** on a self-collected dataset of **200** Amazon listings.

COMPETITIONS AND AWARDS

1st Place of 26 Teams — Waymo Mobility Challenge, ShellHacks 2025 (BirdsEye)

1st Place of 104 Teams — Assurant Way Challenge, ShellHacks 2025 (BirdsEye)

4th Place of 113 Teams — Division 2, ICPC NA Big South Regional 2023 (UCF-JV Saragossa)

TECHNICAL SKILLS

Certifications: AWS Solutions Architect, AWS Cloud Practitioner
Languages: Python, C/C++, SQL, Java, JavaScript, R, LaTeX
Machine Learning: PyTorch, TensorFlow, Scikit-Learn, Transformers, ONNXRuntime, OpenCV, YOLO, TorchScript
Tools and Platforms: AWS, Docker, Kubernetes, Flask, Git, MongoDB, MySQL, PostgreSQL, Pandas, NumPy