

David Robinson

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EDUCATION

University of Central Florida

Bachelor of Science in Computer Science, Intelligent Robotic Systems Minor

May 2026

3.94 GPA

EXPERIENCE

Undergraduate Researcher

UCF Center for Research in Computer Vision

August 2024 – Present

Orlando, FL

- Optimized state-of-the-art **3D pose and motion estimation networks** (WiLoR, MotionBERT) for joint-angle regression and temporal motion scoring on 3D hand joint sequences using PyTorch.
- Constructed and annotated a dataset of **1,000+** Box and Block Test clips (RGB + 3D pose) labeled with four action classes for stroke mobility research, running inference with **WiLoR** for 3D keypoint estimation.
- Benchmarked transformer- and CNN-based architectures (R3D, Video Swin Transformer, Video MViT, MotionBERT, PoseConv3D) for spatiotemporal action recognition on the StrokeVision-Bench dataset, achieving up to **90.2%** accuracy.

Machine Learning Engineer

Contract

March 2025 – May 2025

Remote

- Designed and trained a pairwise neural network with Embedding-LSTM modules and an MLP classification head for string similarity, achieving **90.7%** accuracy and **93.6%** precision on a custom dataset of **4,000** manually labeled string pairs.
- Accelerated inference by **4×** via ONNXRuntime graph optimizations (kernel fusion and constant folding), vectorized preprocessing, and fuzzy-match pruning, maintaining **<1 s** response times.
- Deployed the end-to-end username classification pipeline via a Flask API, integrating structural, phonetic, and semantic features, and performing multi-label classification through similarity thresholding against domain-specific word sets.

Software Engineering Intern

Dynamic Animation Systems

August 2023 – July 2024

Orlando, FL

- Fine-tuned the **Mistral-7B** language model using **LoRA** adapters for structured text generation of simulation scenario files validated against an XSD schema.
- Developed an ontology-driven framework for simulation hosting, enabling containerized deployment across on-premises and cloud environments via **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

- Developed a navigation system that performs lane-level traffic flow analysis using FDOT live camera feeds and GPS waypoint sampling via the Google Maps API for real-time route monitoring.
- Implemented a **YOLOv11**-based perception pipeline with **NumPy** and **OpenCV** for multi-object detection and tracking across synchronized traffic cameras, estimating per-lane vehicle speeds and determining the fastest lane without user reports.

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 validation loss by **95.8%** and deploying the model with Flask for inference.
- Constructed a recommendation dataset using TF-IDF and co-occurrence scoring on product usage data with **150+ entries**.

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, MATLAB, R, LaTeX

Machine Learning: PyTorch, TensorFlow, Scikit-Learn, Transformers, ONNXRuntime, OpenCV, YOLO, TorchScript, MMDetection

Tools and Platforms: AWS, Docker, Kubernetes, Flask, Git, MongoDB, MySQL, PostgreSQL, Pandas, NumPy, ROS 2