Mario A. Camarena

(+1) 956-455-1591 | cs.mario.camarena@gmail.com | LinkedIn | GitHub | Portfolio

EDUCATION

The University of Texas Rio Grande Valley (UTRGV)　　　　　　　　　　　**Jun 2025 – Expected 2027**
Master of Science, Computer Science　　　　　　　　　　　　　　　　　　　　　　　*GPA: 4.0/4.0*
The University of Texas Rio Grande Valley (UTRGV)　　　　　　　　　　　　**May 2021 – May 2025**
Bachelor of Science, Computer Science　　　　　　　　　　　　　　　　　　　　　　*GPA: 3.4/4.0*

EXPERIENCE

Artificial Intelligence Research Assistant　　　　　　　　　　　　　　　**Feb 2024 – Present**
UTRGV MECIS (NSF CREST), Dept. of Civil Engineering　　　　　　　　　　　　　*Edinburg, TX*
- **Improved urban-scene segmentation accuracy by 29%** for autonomous driving use cases by leading a custom "AD-SAM" dual-encoder effort from dataset prep to evaluation. *Pending publication on IEEE-T-ITS*
- **Reduced boundary errors and class-imbalance misses** by adopting a deformable decoder and hybrid loss (Focal, Dice, Lovász, Surface), improving per-class consistency across 19 classes.
- **Ran a driving-simulator study**, managing logistics, data collection, data cleaning, and human subject testing. With the goal of testing on a Graph Convolutional Network (GCN) model to predict driver emotional responses, and support the development of emotion-aware autonomous systems.

Machine Learning Intern (REU)　　　　　　　　　　　　　　　　　　**Jun 2024 – Aug 2024**
University of California, Riverside　　　　　　　　　　　　　　　　　　　　　　*Riverside, CA*
- **Benchmarked segmentation models** (SAM, G-SAM, DeepLabV3, UNET, YOLO-based baselines) on real-world data and summarized trade-offs to guide model selection in autonomy applications.
- **Conducted a comparative analysis** of performance; collaborated with a Ph.D. mentor on reporting for reproducible results.

PROJECTS

STABLES — Simulated Parking Management App | Flutter, Node.js/Express, PostgreSQL, Python
Project Lead & Lead Developer | Live: stables-utrgv-parking-app.web.app
- **Shipped a cross-platform app managing 800+ parking spots across 3 lots** with live availability and reservations; led a 4-person team end-to-end.
- **Built the backend** (Node.js/Express + PostgreSQL) and a **Python simulator** generating time-based synthetic data for realistic load testing.
- **Implemented spatial checks and double-booking prevention**; enforced code review standards and task ownership.

Online Portfolio — Interactive Website | Next.js, TypeScript, PostgreSQL, Framer Motion, Tailwind CSS
Live: mario-camarena.netlify.app
- **Built an interactive portfolio** with advanced animations (magnetic buttons, typewriter sequences, floating particle canvas, scroll-triggered effects) to showcase projects and research work.
- **Implemented a full-stack contact system** with PostgreSQL and a protected admin dashboard featuring submission analytics.
- **Optimized responsive performance and UX** across mobile/desktop using Tailwind + Framer Motion and careful animation budgeting.

Custom PC Builds and Mobile Device Repair | Hardware Assembly & Troubleshooting
Freelance Hardware Technician
- **Delivered custom PCs tailored to budget and performance needs**, scoped requirements with customers; handled component selection, system tuning, and cooling design across gaming rigs and home-office builds.
- **Diagnosed and repaired smartphones end-to-end** including screen replacements and battery swaps.
- **Set expectations with clear estimates and approvals**; provided written quotes, timelines, and status updates.

Coffee Brewing Outlier Detection — HackResearch 2025 Winner | Python, Pandas, NumPy, Matplotlib
Hackathon Team Lead
- **Won HackResearch 2025 (24-hour hackathon)** by identifying the anomalous espresso shot from 13 unlabeled brewing logs; correctly flagging the outlier
- **Built an end-to-end time-series pipeline** and extracted non-standard features to implemented distance-based outlier scoring.

SKILLS

- **Languages:** Python; JavaScript/TypeScript; Dart; C++; Rust.
- **ML:** PyTorch; TensorFlow; Jupyter; CUDA (exposure); model evaluation.
- **Web/App:** React; Next.js; Flutter; Node.js/Express; Ruby; Tailwind CSS; Framer Motion.
- **Data/Infra:** PostgreSQL; SQLite; Git/GitHub; Google Cloud Platform; Linux.