

Gaspar J. Montoya

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EDUCATION

University of Nevada, Las Vegas

B.S. Computer Engineering, Minor in Data Science & Artificial Intelligence

Las Vegas, NV

Expected May 2027

RESEARCH INTERESTS

Robotics and autonomous systems • Autonomous vehicle perception and planning • Learning-enabled perception • Computer vision in real-world, unstructured environments • Multimodal sensing and sensor fusion (camera, thermal, multispectral, GPS) • Data collection and curation for perception models

RESEARCH EXPERIENCE

Undergraduate Research Assistant

April 2025 – Present

Prof. Venki Muthukumar, UNLV Dept. of Electrical & Computer Engineering

Las Vegas, NV

- Designed and built a three-camera autonomous UAV for wildfire research, covering CAD design, 3D-printed mounts, custom wiring, motor calibration, payload balancing, and full system integration
- Integrated thermal and multispectral cameras, GPS, telemetry radios, and the flight controller for stable autonomous flight and real-time data collection in lab and field environments
- Deployed a LiDAR-inertial SLAM stack on a Unitree Go2 quadruped, fusing Livox Mid-360 scans with IMU data to map unstructured field sites in 3D
- Developed a MAVLink-based geotagging pipeline on a Raspberry Pi 4B, sampling GNSS in a drift-corrected thread and writing EXIF tags for photogrammetry ingest

PROFESSIONAL EXPERIENCE

Computer Engineer Intern

May 2024 – August 2024

NV Energy, Power Generation Team

Las Vegas, NV

- Developed a Management of Change application in Python and Power Apps to digitize approval workflows across 13 power plants, reducing change-request processing time by over 40%
- Integrated Power Fx logic with SharePoint automation to track engineering modifications in real time, improving traceability and cutting manual data entry by 25%

TEACHING EXPERIENCE

Engineering Peer Mentor

August 2024 – Present

Engineering 101, UNLV Howard R. Hughes College of Engineering

Las Vegas, NV

- Led weekly engineering labs and mentored 40 first-year students through hands-on design projects
- Provided instruction in engineering communication, teamwork, and technical problem-solving

LEADERSHIP

Howard R. Hughes Student Senator

July 2025 – January 2026

Consolidated Students of UNLV

Las Vegas, NV

- Represented over 4,000 engineering students on the University Initiatives and Internal Affairs committees
- Advocated for expanded undergraduate research access and funding, with a focus on underrepresented and international students

HONORS & AWARDS

UNLV Pipe-UP, NSF EPSCoR RII-BEC Cohort

2025 – Present

- Selected as one of roughly 20 students for a competitive four-year NSF-funded program supporting undergraduate research training, graduate school preparation, and STEM mentorship

UNLV Tuition & Books Scholarship

2022 – Present

- Merit-based award covering tuition in recognition of sustained academic performance

Dean's List Honoree, UNLV College of Engineering

Fall 2024

- Recognized for maintaining top academic standing within the college

PRESENTATIONS & CONFERENCES

Annual Harnessing the Data Revolution for Fire Science (HDRFS) Meeting

April 1–2, 2026

University of Nevada, Las Vegas

Oral presentation & poster

- Presented UAV-based wildfire monitoring research alongside PhD and postdoctoral researchers, with the drone system on display for hands-on review

UNLV Undergraduate Research Symposium

Spring 2026

University of Nevada, Las Vegas

Poster presentation

- Presented wildfire UAV research to faculty, researchers, and peers across disciplines at the campus-wide symposium

SELECTED PROJECTS

Real-Time Fruit Detection Model

Python, YOLO11, PyTorch

- Captured and hand-labeled a custom 100-image dataset in Label Studio, varying lighting and backgrounds to diversify training samples
- Trained a YOLO11 model for 60 epochs on a Colab T4 GPU, then deployed it locally in a PyTorch/Anaconda environment for real-time webcam inference on an RTX 4060

TECHNICAL SKILLS

Software: Python, C++, C, SystemVerilog, RISC-V, Bash, Git, Linux, HTML/CSS

Robotics: ROS 2, SLAM, FAST-LIO2, Nav2, CycloneDDS, PX4, MAVLink, Livox Mid-360, Sensor Fusion

Hardware: Fusion 360, 3D Printing, Soldering, Custom Wiring, UAV Assembly, Pixhawk, Raspberry Pi, Arduino

Machine Learning: PyTorch, TensorFlow, OpenCV, YOLO, NumPy, Pandas

Languages: English (Native), Spanish (Native)

REFERENCES

Sarah Harris, Ph.D.

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