

# Roberto Raymundo Gomez Vargas

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## Education

### Tecnologico de Monterrey (ITESM), Campus Monterrey

*Expected Graduation: Dec 2026*

*B.S. in Robotics and Digital Systems Engineering*

*Monterrey, Mexico*

• GPA: 4.0/4.0 | Average: 98/100 (*Top 1%*)

Coursework: Intelligent Robotics, Computer Vision, Control Systems, Data Structures & Algorithms, Kinematics & Dynamics.

### University of Seoul (UOS), Exchange Program — Grade: A+

*Aug 2025 – Dec 2025*

Coursework: Artificial Intelligence (AI/ML/DL), Advanced Embedded Systems, Solid-State Electronics

*Seoul, South Korea*

### Beijing Institute of Technology (BIT), Summer Program — Grade: A+

*Jul 2025 – Aug 2025*

Coursework: Advanced Electronics, Embedded Systems, Computer Science

*Beijing, China*

## Work Experience

### Robotics Research Intern, AIST – Tsukuba, Japan

*Mar 2026 – Sep 2026*

- At AIST (National Institute of Advanced Industrial Science and Technology), developed autonomous navigation for a mobile robot by integrating autonomy modules (e.g., LiDAR SLAM), enabling robust operation around complex obstacles/terrain.
- Implemented end-to-end robotic-arm integration on the mobile manipulator, programming motion/task routines and developing the closed-loop control system to ensure safe, reliable manipulation in autonomous and teleoperated operation.

### Robotics Engineer Intern, Smart Factory MTY – Monterrey, Mexico

*Feb 2024 – Jun 2024*

- Assembled, diagnosed, and repaired industrial robots (UR3/UR5, xArm 5/6, Baxter, ABB YuMi), improving reliability and reducing downtime by 20% via root-cause diagnostics, corrective repairs, and preventive maintenance.
- Engineered a high-precision end-effector/gripper mounted on an industrial robot (SolidWorks; 3D printing, laser cutting), improving handling repeatability and increasing throughput by 30%, validated through production-cell testing.

### Systems & Data Automation Engineer (Part-time), ITESM – Monterrey, Mexico

*Feb 2023 – Mar 2026*

- Managed multi-campus compliance data operations for government documentation, overseeing \$5.3M in projects and contracts; automated systems to reduce manual work for 100+ employees and improve processing time by 21%.

### Freelance Technology Specialist, Self-Employed – Monterrey, Mexico

*2022 – Present*

- Partnered with Mexican SMEs, implementing automation and integrating technology to improve operational efficiency.

## Awards & Recognition

### "SafeSpace" (3rd Place), Expo Ingenierias – Monterrey, Mexico

*Dec 2023*

- Built an AI-enabled senior home safety system: AI facial recognition, multi-sensor automation, and remote web monitoring.

## Research & Invited Talks

[\[Access Full Paper\]](#)

### Guest Lecturer & Researcher, University of Seoul – Seoul, South Korea

*Dec 2025*

- Authored a faculty-reviewed research paper, *Neuromorphic Computing and Memristor-Based Devices in Intelligent Robotics*, analyzing solid-state device physics and linking neuromorphic/memristor capabilities to energy-efficient intelligent robotics.
- Invited by the engineering faculty to deliver a lecture to an international cohort at the University of Seoul; presented research on neuromorphic computer architectures and led scholarly discussions on the future of hardware-accelerated AI systems.

## Projects

[\[portfolio: raymundo140.github.io\]](#)

### Self-Driving Car – Manchester Robotics Collaboration

[Project Documentation](#)

- Developed an AI-enabled, computer-vision autonomous mobile robot for indoor navigation, integrating line following with traffic-light detection and YOLOv8 traffic sign recognition (Jetson Nano, ROS 2 Humble, micro-ROS, OpenCV, Python, PID).

### Autonomous Tractor Navigation System – John Deere Collaboration

[Project Documentation](#)

- Led an engineering team to build an autonomous navigation and tracking system for John Deere tractors using camera + encoder/IMU feedback; implemented wireless coordinate updates (STM32/Raspberry Pi, C/Python, FreeRTOS, Linux, CAN).

## Skills

- **Programming:** Python, C/C++, C#, MATLAB, Bash, VHDL, Assembly, HTML, SQL, R, OpenMP, parallel programming.
- **Tools:** ROS 2, micro-ROS, OpenCV, YOLOv8, PyTorch, TensorFlow, Gazebo, RViz, CoppeliaSim, Docker, Git/GitHub, Linux/Embedded Linux, FreeRTOS, Simulink, PID, state machines, VS Code, SolidWorks, Fusion 360, Unity, Nginx, MQTT.
- **Hardware:** STM32, ESP32, NVIDIA Jetson Nano, Raspberry Pi, Arduino, PLCs, FPGAs, LiDAR, SLAM, RGB-D cameras, IMU, encoders, soldering, oscilloscope, 3D printing, laser cutting, CAN/UART/SPI/I2C/I2S/Wi-Fi/BL/nRF/LoRa/RFID.
- **Languages:** Spanish (Native), English (Near-Native – C2), German (Intermediate – B1)