Eduardo de Jesús Dávila Meza, Ph.D.

AI/ML · Computer Vision · Embedded Systems · ROS

Engineer · Researcher · Educator

- 👤 Man (male)
- 🚩 Mexican
- 🏠 Guadalajara, Jalisco, Mexico
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- in EduardoDavila-AI
- ⓖ eDavila-DrRaccoon
- Ⓗ HackerRank: eduardodavila94
- iD ORCID: 0000-0002-3493-400X
- 💼 Professional portfolio
- 🎓 Federal professional certificates
  Bachelor's: 12027207
  Master's: 14043743

🛠️ Technical Skills

- ⚙️ Linux (Ubuntu), Windows
- </> Python, C++, SQL, MATLAB, MPLAB, Arduino
- OpenCV, TensorFlow, ROS & ROS 2
- 🧩 JSON, Keras, Matplotlib, NumPy, Pandas, PIL, Scikit-learn, Seaborn, Tkinter
- VS Code, Jupyter Notebook, Git, GitHub
- SOLIDWORKS, PROTEUS, LabVIEW
- LaTeX, Markdown, MS Office, Dia (diagrams)

👥 Other Skills

- ✏️ Self-taught
- ◎ Goal-oriented
- ⚡ Proactive
- 👥 Teamwork
- 💬 Communication
- ☺ Positive attitude
- ☰ Responsible
- 🤝 Customer support

🔤 Languages

- 🇲🇽 **Spanish** | Native: full professional proficiency.
- 🇺🇸 **English** | B2 (Advanced): fluent in reading, writing, and technical comprehension; intermediate spoken; proficient for research publications, documentation, and international collaboration. Certified by Cinvestav, Guadalajara Campus, Feb. 2023.

💼 Work Experience & Projects

Mar. - Jun. 2025 Apr. - Jul. 2024	⭐ **Robot Programming Professor**	📍 Tecnológico de Monterrey, Gdl.

Led courses on ROS (Robot Operating System) and ROS 2 for students in Robotics and Intelligent Systems Engineering, focusing on software development for differential drive robots. Recognized as a top-rated professor (See recognition ↗). See repository ↗

🏷️ C++ · Python · ROS · Technical instruction · Computer vision · Code debugging

May 2021 - Jul. 2024 — ⭐ **AI/ML Engineer** — 🏢 Recognition of Fundus Pathologies

Collaborated with German eye hospitals to develop a Mask R-CNN model aimed at identifying fundus pathologies in medical images, managing the complete AI/ML lifecycle, from data preprocessing and augmentation to model training and validation.

🏷️ Mask R-CNN · TensorFlow · Keras · Data augmentation · Data visualization

Dec. 2019 - Oct. 2023 — ⭐ **Computer Vision & ROS Developer** — 🏢 OJO SMART

Built ROS nodes for real-time recognition of colors, objects, signs, banknotes, and text, integrating them into a modular visual navigation device designed to support users with visual impairments.

🏷️ ROS · OpenCV · TensorFlow · C++ · Python · OCR

Sep. - Dec. 2022 — **Graduate Teaching Assistant** — 📍 Cinvestav, Guadalajara

Supported a course in AI and Computer Vision, assisting master's and PhD students, guiding them in developing neural network models for visual recognition tasks.

🏷️ Python · TensorFlow · OpenCV · MATLAB · Problem solving · Code debugging

Jul. 2016 - May 2017 — **Lead Embedded Developer** — 🏢 CUValles Tech Dev Club

Led technological projects and developed patent-pending embedded systems focused on automation and sustainability, guiding to student teams on prototyping and sensor integration for automation applications.

🏷️ Embedded Systems · Signal Processing · Leadership · Prototyping · Patents

Aug. - Dec. 2016 — **PIC Workshop Advisor** — 📍 University of Guadalajara

Conducted workshops on basic and advanced PIC microcontroller programming in C (XC8), guiding students in circuit prototyping and debugging in both real and simulated environments.

🏷️ MPLAB · I2C & SPI · Technical instruction · Code debugging · PROTEUS

📘 Research Contributions

Jun. 2024 — **Meeting Abstract**

"Deep-learning based quantification of RPE65-mutation inherited retinal degeneration", presented at *Investigative Ophthalmology & Visual Science*, vol. 65(7), 1392, ⓘ ID: 2794864 ↗.

🏷️ Mask R-CNN · Image analysis · ML lifecycle · Feature extraction · Research

Sep. 2023 — **Journal Article**

"Quaternion and Split Quaternion Neural Networks for Low-Light Color Image Enhancement", in *IEEE Access*, vol. 11, 108257-108280, doi 10.1109/ACCESS.2023.3312234 ↗.

🏷️ AI/ANNs · Image color analysis · Quaternion algebras · Color spaces · EKF

2017 — **Patent**

"Device for controlling underactuated two-link systems with one actuator", application no. MX/a/2017/016436, filed under the University of Guadalajara's Invention Support Program.

🏷️ Embedded systems · Control theory · PICs · SPI · Power and digital electronics

🎓 Academic Degrees

Sep. 2019 - May 2024 — **PhD in Electrical Engineering — AI/ML** — 📍 Cinvestav, Guadalajara

Thesis | Deep learning for recognition and quantification of fundus pathologies using instance segmentation, and quaternion neural networks for low-light image enhancement.

🏷️ SciComm · Research · Mask R-CNN · Medical image analysis · AI/ML lifecycle

Sep. 2017 - Aug. 2019 — **MSc in Electrical Engineering — AI/ANNs** — 📍 Cinvestav, Guadalajara

Thesis | Quaternion neural networks for low-light image enhancement, and identification of an electromechanical system.

🏷️ SciComm · Research · Robotics · AI/ANNs · Control theory

Aug. 2012 - Dec. 2016 — **BEng in Mechatronics — Embedded Sys.** — 📍 University of Guadalajara

Social service & Professional Internship | Assistance and development of electronic and mechatronic projects in the electronics and telecommunications laboratory.

🏷️ Embedded systems · Programming · Digital electronics · HMI · Control theory

✳️ Certifications

- 🔶Ⓚ AI/DL ↗
- 📊 AI/ML ↗
- 📋 DataClean ↗
- ⬆️ LLMs ↗
- ⬆️ NLP ↗
- OpenCV ↗
- 📊 Pandas ↗
- 🐍 Python ↗
- Ⓡ R ↗
- ROS ↗
- 📊 Scikit-learn ↗
- 🗄️ SQL ↗
- 🔶Ⓚ TF-Keras ↗
- Full list ↗