Eduardo de Jesús Dávila Meza, Ph.D.

AI/ML · Computer Vision · Embedded Systems · ROS

Engineer · Researcher · Educator

Man (male)

Mexican

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EduardoDavila-AI

eDavila-DrRaccoon

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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
- Communication
- Goal-oriented
- Positive attitude
- Proactive
- Responsible
- Teamwork
- 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 on Computer Vision and Artificial Intelligence, 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