Eduardo de Jesús Dávila Meza

AI/ML • Computer Vision • Embedded Systems • ROS/ROS2
Engineer • Researcher • Educator
eduardodavila94@hotmail.com +52 33 2969 2743 Professional Portfolio EduardoDavila-AI eDavila-DrRaccoon
Federal Professional Certificates: Bachelor's Degree: 12027207 • Master's Degree: 14043743 • Ph.D. Degree: 15067339

Technical Skills

Operating Systems: Linux (Ubuntu), Windows
Programming Languages: Python, C++, SQL, MATLAB, MPLAB (XC8), Arduino
Libraries and Frameworks:
C++ and Python: OpenCV, TensorFlow, ROS & ROS 2
Python: JSON, Keras, Matplotlib, NumPy, Pandas, PIL, Scikit-learn, Seaborn, Tkinter
Development Tools: VS Code, Jupyter Notebook, Git, GitHub
Embedded System Tools: SOLIDWORKS, PROTEUS, LabVIEW
Document Preparation and Office Tools: LaTeX, Markdown, MS Office, Dia (diagram editor)

Soft Skills

- Self-taught
- Goal-oriented
- Proactive
- Teamwork
- Communication
- Positive attitude
- Responsible
- Customer Support

Languages

Spanish | Native: full professional proficiency.
English | Advanced B2: fluent in reading, writing, and technical comprehension; intermediate spoken; proficient for research publications, documentation, and international collaboration. Certified by Cinvestav, Guadalajara Campus, February 2023.

Work Experience & Projects

Tecnológico de Monterrey (ITESM), Guadalajara **April 2024 – Present**
Professor – ROS/ROS2 & Python *Zapopan, Jalisco*
Leading courses on ROS/ROS2 (Robot Operating System) with Python and C++ for differential drive robots, as well as a course on Python fundamentals. Recognized as a top-rated professor (See recognition). See repository.

Python · C++ · ROS/ROS2 · Code debugging · Computer science · Software development · Technical instruction

Recognition of Fundus Pathologies — Medical Image Segmentation **May 2021 – July 2024**
AI/ML Engineer *Zapopan, Jalisco*
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.

AI/ML · Computer vision / Image processing · Mask R-CNN · TensorFlow-Keras · Data labeling, augmentation, and visualization

Intelligent Visual Guide System (OJO SMART) — Modular Navigation Device **December 2019 – October 2023**
Computer Vision & ROS Developer *Zapopan, Jalisco*
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.

Computer vision / Image processing · Python · C++ · ROS · Tesseract OCR · OpenCV · TensorFlow

Full List

Publications & Patents

Meeting Abstract | **June 2024** | "Deep-learning based quantification of RPE65-mutation inherited retinal degeneration", presented at *Investigative Ophthalmology & Visual Science*, vol. 65(7), 1392, ID: 2794864.

AI/ML lifecycle · Computer vision / Medical image analysis · Data visualization · Mask R-CNN · Feature extraction · Research

Journal Article | **September 2023** | "Quaternion and Split Quaternion Neural Networks for Low-Light Color Image Enhancement", in *IEEE Access*, vol. 11, 108257-108280, 10.1109/ACCESS.2023.3312234.

AI/ANN lifecycle · Computer vision / Image color analysis · Quaternion algebras · Color spaces · EKF

Patent | **March 2017** | "Device for controlling underactuated two-link systems with one actuator", filed under the Invention Support Program, University of Guadalajara. Application no. MX/a/2017/016436.

Embedded systems · Control theory · Digital and power electronics · PICs · SPI & I2C communication protocols

Academic Degrees

Ph.D. in Electrical Engineering — AI/ML | Cinvestav, Guadalajara **September 2019 – May 2024**
Thesis | Deep learning for recognition and quantification of fundus pathologies using instance segmentation, and quaternion neural networks for low-light image enhancement.

AI/ML lifecycle · Computer vision / Image analysis · CNN/NN · Research · Science Communication

M.Sc. in Electrical Engineering — AI/ANNs | Cinvestav, Guadalajara **September 2017 – August 2019**
Thesis | Quaternion neural networks for low-light image enhancement, and identification of an electromechanical system.

AI/ANNs · Computer vision / Image enhancemnt · Control theory · Robotics · Research · Science Communication

B.Eng. in Mechatronics — Embedded Systems | University of Guadalajara **August 2012 – December 2016**
Social service & Professional Internship | Assistance and development of electronic and mechatronic projects in the electronics and telecommunications laboratory.

Embedded systems · Control theory · Digital and power electronics · HMI · PICs & Arduino

Certifications

AI/DL	AI/ML	Data Cleaning	LLMs	NLP	OpenCV	Pandas
Python	R for DS	ROS	Scikit-learn	SQL	TF-Keras	Full list