Antonio Pico Villalpando

Computer Scientist
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Skills

Machine Learning & Data Science: Machine learning, deep learning, data analysis, predictive modeling, computer vision, reinforcement learning.

Programming & Tools: Python, C/C++, Linux, Git, Docker, Pytorch, Tensorflow, Keras, ROS, FreeRTOS, OpenCV, Numpy, Pandas, Flask, SQL, Scikit-learn.

Hardware: Robotics, embedded systems, microcontrollers (ATMEGA, ESP32, STM32), Raspberry Pi.

Languages: Spanish (Native speaker), English (Professional) and German (B1).

Experience

Feb 2024–May 2024 **Research Fellow**, Humboldt University of Berlin — Berlin, Germany
Project: Metatool.
- Developed a Wi-Fi-enabled claw machine prototype, integrating machine learning algorithms for enhanced operational efficiency.

Jan 2018–Aug 2022 **Research Fellow**, Humboldt University of Berlin — Berlin, Germany
Project: ROMI: Robotics for Microfarming - Horizon 2020 Project, No. 773875.
- Applied computer vision algorithms for 3D reconstruction from 2D images.
- Optimized camera movement trajectories using deep reinforcement learning.
- Developed a tactile sensing system with piezoelectric 'whiskers,' using transfer learning for texture classification via convolutional neural networks.

Oct 2014–Dec 2017 **Scholarship Holder**, German Academic Exchange Service (DAAD) — Berlin, Germany
- Doctoral research in computer science focused on machine learning in robotics.
- Implemented deep learning methodologies, including convolutional networks, autoencoders, and LSTMs, to develop prediction models for mobile robots. This research focused on multimodal fusion of inertial sensor, audio, and speed data, utilizing unsupervised and supervised learning techniques.

Jan 2009–Oct 2010 **Design Engineer**, GRENASER — Texcoco, Mexico
Risk and Natural Resources Management using Remote Sensors.
- Developed software and hardware for multispectral canopy reflectance sensors on ground and aerial drones.

Oct 2005–Aug 2008 **Technical Consultant**, Museo Semilla — Chihuahua, Mexico
Semilla museum, science and technology center.
- Designed electronic circuit boards and embedded systems for interactive exhibits.

Education

Oct 2014–Nov 2024 **PhD in Computer Science** , Humboldt University of Berlin — Berlin, Germany
Magna Cum Laude
Thesis: Ego-noise prediction models for mobile robots.
Applied machine learning and neural networks for sensori-motor prediction in robots.

Jan 2023–Mar 2023 **Data Scientist**, Data Science Retreat. Full-time bootcamp. — Berlin, Germany
Project: Implemented vision and text embeddings from deep learning CLIP model for e-shop item similarity search.

Oct 2010–Dec 2012 **Master of Science in Computer Science**, CINVESTAV IPN — Mexico City, Mexico
Thesis: Design and implementation of a control system for a quadcopter.
Built drone with Linux board, using differential evolution to adjust PID controllers.

Aug 1999–Jun 2004 **Electronic Engineering**, Instituto Tecnológico de Chihuahua — Chihuahua, Mexico
Thesis: Control interface for a Rhino XR-1 robotic arm.
Developed electronic circuits to control Rhino XR-1 robotic arm joints.