

Summary

As an engineer skilled in mathematics, control theory, and machine learning, I have a deep interest in enhancing AI, robotics, and motor drives using innovative technologies.

Skills

Python, C/C++, OpenCV, MATLAB/Simulink, Research, Problem Solving, Web Development, Electrical Design, Embedded Systems Design (HAL: Texas Instruments, STMicroelectronics, Atmel), CI/CD (Github Actions and Gitlab pipelines), HTML/CSS, React, Django.

Experience

- May 2017–Present **Research Assistant**, *Centro de Investigación y de Estudios Avanzados del IPN*
- Designing and building a Three-Phase Inverter for driving an industrial Permanent Magnet Synchronous Motor (PMSM).
 - Implementing control algorithms in real-time on Texas Instruments boards (LAUNCHXL-F28069M and LAUNCHXL-F28379D) using rapid prototyping methods with MATLAB Simulink and the TI C/C++ Compiler.
 - Application of neural network-based control algorithms on Electric Motor Drives.
 - Developing new control methods for hybrid regulation of systems and exosystems with impulsive dynamics.
 - Writing technical reports, conference papers, and journal articles.
- Jan 2022–Apr 2022 **Teaching Assistant**, *Centro de Investigación y de Estudios Avanzados del IPN*
- Jan 2021–Apr 2021 Providing guidance and some lectures to master's students in the subject of Nonlinear Systems.
- Apr 2022–Aug 2022 **Research Stay**, *Università degli Studi dell'Aquila*
- Researching new control methods for hybrid systems which exhibit jumps aperiodically.
- May 2015–Oct 2015 **Data Monitoring Assistant**, *Petrolink*
- Writing an application to display different alerts based on the online data retrieved from the drilling process.
 - Writing reports of the drilling process.
- Mar 2013–Aug 2013 **Drilling Tools and Remedial Assistant**, *SLB*
- Assistance in the inspection of drilling bits.
 - Assistance in the grinding processes of the drilling bits on lathes.
 - Data capture during the inspection and after the grinding processes of the drilling bits.

Education

- Nov 2019–Feb 2024 (Expected) **PhD, Engineering and Information Sciences**, *Università degli Studi dell'Aquila*
- Sep 2019–Feb 2024 (Expected) **PhD, Electrical Engineering and Automatic Control**, *Centro de Investigación y de Estudios Avanzados del IPN*
- Sep 2016–Dec 2018 **MS, Electrical Engineering and Automatic Control**, *Centro de Investigación y de Estudios Avanzados del IPN*
- Jan 2015–Jun 2016 **MEng, Robotics**, *Universidad Autónoma de Guadalajara*
- Aug 2010–Aug 2014 **BS, Mechatronics Engineering**, *Universidad Autónoma de Guadalajara*

Courses

- Jun 2023 Machine Learning
- Apr 2023 IBM Full Stack Software Developer
- Nov 2022 Cloud Application Development Foundations

Languages

- Spanish - Native
- English - Advanced
- Italian - Beginner