IGNACIO MARTÍN ARZUAGA GARCÍA

Cambridge, MA | arzuaga@mit.edu | (617) 870-8668 | LinkedIn | Website

Recent PhD graduate with extensive research experience in machine learning and experimental data analysis, skilled in Python-based pipeline development and deep learning architectures. Demonstrated ability in refining predictive models using CNNs and TensorFlow for high-dimensional data.

SKILLS

- **Programming & Data Analysis:** R, MATLAB, Python
- **Machine Learning & Statistics:** Predictive Modeling, Feature Engineering, Time Series Analysis, Deep Learning (CNNs)
- **Data Visualization & Communication:** Tableau, Matplotlib, Technical Presentations
- **Industry Applications:** Energy Systems, Structural Data Analysis

EDUCATION

Massachusetts Institute of Technology (MIT) | Cambridge, MA
- Ph.D. Candidate in Engineering Mechanics – GPA: 4.9/5 *August 2025*
  Achievements: Riccio Graduate Engineering Leadership Program
- M.Sc. in Civil and Environmental Engineering – GPA: 4.7/5 *August 2018*

MIT Sloan School of Management | Cambridge, MA
- Business Analytics Certificate – GPA: 5/5 *May 2023*

University of Buenos Aires | Buenos Aires, Argentina
- B.Sc. in Civil Engineering – GPA: 8.6/10 (Honors) *February 2013*

EXPERIENCE

MIT Department of Civil and Environmental Engineering | Cambridge, MA *June 2019 – August 2025*
Research Assistant, PhD candidate

- Developed Python-based data pipelines for processing high-dimensional experimental time series data, demonstrating proficiency in deep learning architectures, optimization methods, and effective data pre-processing for ML applications.
- Refined a CNN model for crack detection from high-resolution experimental images, leveraging feature engineering and deep learning to enhance detection accuracy and system reliability.
- Conducted experimental research on rock fracturing processes using advanced visualization and acoustic emission techniques, providing valuable data insights for optimizing energy applications and validating simulation models.

MIT Department of Nuclear Science and Engineering | Cambridge, MA *May 2021 – May 2023*
Research Assistant

- Engineered a machine learning model with TensorFlow to analyze structural integrity in reactor simulations, honing skills in large-scale ML algorithms, statistical modeling, and model debugging.
- Analyzed FEM simulation datasets to optimize structural design, ensuring compliance with industry standards and reinforcing expertise in data pre-processing and quantitative analysis.

SIM&TEC Simulation and Technology | Buenos Aires, Argentina *Nov 2014 – Jan 2016*
Data Analyst

- Conducted numerical analysis for satellite structural analysis, ensuring model validation and improving simulation accuracy
- Developed Python scripts for data preprocessing and automation of simulation workflows, enhancing efficiency and reducing processing time.

LEADERSHIP & TEACHING EXPERIENCE

MIT CEE Communication Lab | *Communication Fellow* (*March 2020 – August 2024)*
- Coached graduate students and researchers on scientific writing, **data storytelling, and visualization**.

MIT Department of Civil and Environmental Engineering | *Teaching Assistant* (*Fall 2021, Fall 2023*)
- Mentored students in **decision-making** for infrastructure projects, specifically regarding Infrastructure Design for Climate Change.