



Dr Germán

Martínez-Ayuso

PhD, Software Developer

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About me

I am a civil engineer with software development focus. I do possess extensive experience in python programming, software development, and continuous integrations/continuous deployment (CI/CD).

Experienced with machine learning algorithms such as KNN neighbours and neural networks, which I have applied to different research and business cases.

My interests are also related to civil engineering, more specifically materials modelling and structural design.

Skills

Programming (Python, Matlab, C++, ...)

Software development (CI/CD, OOP, ...)

Structural engineering (Finite element methods)

Data Analysis (Cleaning, Visualization, etc.)

Data science tools (Numpy, Pandas, etc.)

Machine learning (Sk-learn, TensorFlow)

Optimisation and algorithms

Spanish*6, English*6, French*3, Logical thinking*6, Problem oriented*5, Communicative*5,

(*)-The skill scale is from 0 (Basic Awareness) to 6 (Expert).

Experience

- 2023-Present Senior Research and Development Engineer**
Ansys Inc
 - Main maintainer of PyMAPDL library, an open source Python interface to Ansys MAPDL structural solvers.
 - Co-owner of Ansys github enterprise organization. Help to maintain CI/CD pipelines and implementing best practices.
 - Co-maintainer of MAPDL solver Ubuntu docker image. Containerization of applications for cloud deployment.
 - Contributor to MAPDL solver and its gRPC data interface. Implementation of new methods to transfer data from the C++ application server to a Python client.
- 2022-2023 Research and Development Engineer II**
Ansys Inc
 - Contributor to PyMAPDL library. Supporting other Ansys libraries ansys/actions, ansys-tools-path, ansys-sphinx-theme, etc.
 - Supporting the technological transformation of business units. Implementing best code practices, maintaining CI/CD pipelines in many organization packages, etc.
- 2020-2021 Research Officer in Data Science**
Medical School, Cardiology department, Swansea University
 - Application of machine learning algorithms (clustering and deep learning techniques) to detect abnormal behaviour in real cardiac cells optical data and fluorescent calcium measurements.
 - Design and development of a workflow to analyse of microscope images. Development of a graphic user interface in Python.
- 2019-2020 Research Fellow in Data Science for Materials Modelling**
Institute of Materials Discovery, University College of London
 - Using numerical techniques based on finite element methods and machine learning techniques to optimise industrial composites such as honeycomb or recycled aggregates.
- 2018-2019 Project Officer in Manufacturing Analysis**
Project ASTUTE2020: Advanced Sustainable Manufacturing Technologie, Swansea University
 - Application of techniques from the domain of data science such as data pre-processing, neural networks and multi constraint optimisation to reduce costs in steel manufacturing industry.

Education

- 2015-2019 PhD in Civil Engineering**
Swansea University (UK)
Micro to macro-scale material modelling using numerical techniques for energy harvesting applications. Fully-funded scholarship.
 - Developed my own non-linear finite element code in Matlab for piezoelectric harvesters based on Euler-Bernoulli beams. Validated experimentally.
 - Used commercial finite element packages to obtain the equivalent mechanical properties of micro composite structures (Homogenization).
- 2010-2013 M.Eng. Civil Engineering**
University of Alicante (Spain)
Strong background in numerical methods.
- 2007-2010 B.Eng. Civil Engineering**
University of Córdoba (Spain)
Special award, Graduated with honours. Best student record award.

References upon request