Dr Germán

Martinez-Ayuso

PhD, Software Developer

germa89.github.io

@ germanmartinezayuso@gmail.com

linkedin.com/in/gmartinezayuso

github.com/germa89

About me

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

Experienced with machine learning algorithms such as K-nearest neighbors 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 (CICD, OOP)

Structural engineering (Finite element methods)

Data Analysis (Cleaning, Visualization)

Data science tools (Numpy, Pandas)

Cloud computing (Azure, GCP)

Machine learning (Sk-learn, TensorFlow)

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 Azure CICD 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 CICD 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 analise 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 Technologies, 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