Maria Vila Pouca

Mechanical Engineer

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Profile

I am a curious young professional with good communication skills. I am a fast learner with great motivation to apply my skills and experience to solve real-world problems. More than 5 years of research in engineering have given me a fast reasoning, problem-solving abilities, innovative thinking and determination and skills to overcome any problem.

Skills

- Enthusiastic, motivated and a rapid learner.
- Team player who performs well in international and multidisciplinary settings
- Advanced analytical, writing and communication skills
- Excellent knowledge of linear algebra
- Python (numpy, pandas, scikit-learn, matplotlib, keras/tensorflow. Basic understanding of nltk), MATLAB, git, bash, FORTRAN

Python ●●●●○ **MATLAB** ●●●●○ **git** ●●◐○○ **bash** ●●●○○ **FORTRAN** ●●●●○

Experience

DigestAid, Consulting through INEGI | May 2022 - Present

- Developed a binary signal classification algorithm
- Analyzed and preprocessed a signal dataset using pandas (resample, feature extraction and selection)
- Developed strategies to select the best model (RepeatedKfold, tree-based ensemble, boosting algorithms, lstm and 1-D CNNs)
- Evaluated and tuned the best models (keras tuner, GridSearchCv, RandomSearchCV, performance metrics)
- Worked in a team using git

Postdoctoral researcher, INEGI | May 2022 - Present

- InterLynk project. Additive manufacturing process of hydrogel scaffolds for tissue regeneration
- Development an experimental and numerical protocol for material characterization
- Analyzed data and developed optimization algorithms to fit experimental data to numerical models (python, MATLAB, FORTRAN)
- Worked in collaboration with multiple partners

PhD researcher, FEUP / University of Michigan | September 2017 – March 2022

- Designed and implemented mathematical material models to simulate the behavior of biological tissues (MATLAB, FORTRAN)
- Data and statistical analysis (MATLAB, python)
- Developed of complex finite element models (ABAQUS)
- Designed and conducted experimental studies on low-cycle fatigue.
- Coordinated with international collaborators.
- Collected and processed data to present at conferences and publish scientific manuscripts.

Invited Assistant Teacher, FEUP | February 2018 – Present

- Taught Linear Algebra and Analytical Geometry, Computer Programming I and Structural Mechanics II, of the integrated Masters in Mechanical Engineering.
- Developed new strategies to motivate students and increase their satisfaction with the courses.

Research assistant, **INEGI** | June 2016 – September 2018

- Developed and implemented complex finite element simulations.
- Collected, processed and analyzed data for publication in scientific journals and present at conferences.

Education

PhD. in Mechanical Engineering, Faculty of Engineering, University of Porto

2017 – 2022 | Approved by unanimity

MSc. in Mechanical Engineering, Faculty of Engineering, University of Porto.

2012 – 2017 | 17/20 (Grade A of European grading scale – 10% students)

Courses and Certifications

Applied Data Science with Python, University of Michigan/Coursera

- Introduction to Data Science with Python (pandas)
- Applied Plotting, Charting & Data Representation in Python (matplotlib/seaborn)
- Applied Machine Learning in Python (pandas, scikit-learn)
- Applied Text Mining in Python (pandas, nltk)
- Applied Social Network Analysis in Python

Research grants, scholarships and awards

PhD Scholarship from Portuguese Foundation for Science and Technology (FCT)

Fulbright Scholarship for Research. Mechanical Engineering Department, University of Michigan, USA.

Pedagogical recognition award (2022). Faculty of Engineering, University of Porto

Publications

I have 13-peer reviewed publications, 8 of them in the top journals of my field. You can find a detailed publication list in my ResearchGate profile.

Other activities

- **Erasmus+ Student Exchange Program** JAMK University of Applied Sciences, Jyväskylä, Finland
- **Instructor** (Summer 2016), University of Porto, Portugal. Introduced high-school students to Mechanical Engineering.
- Federate **Artistic Roller Skating** athlete (2000-2015)
- **Participation** on **International Championships** such as Oeiras 2013-European Artistic Roller Skating Championship and Reus 2014-Artistic Roller Skating World Championship in representation of the Portuguese National Team
- **Participation** in the "Elizabeth Johnson Organization English Language Course", in Bristol, England, from 19th to 31th of July of 2009