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.
- Advanced analytical, writing and communication skills
- Proficient in English
- Python (numpy, pandas, scikit-learn, matplotlib, keras/tensorflow. Basic understanding of nltk), MATLAB, git, bash, FORTRAN
- SQL and big data tools: Impala, Hive, basic knowledge of Hadoop Distributed File System and Amazon Simple Storage Service (access through Hue and command line)

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

Experience

Consultant Data Scientist, 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, tensor and matrix operations)
- Data and statistical analysis (MATLAB, python)
- Developed of complex finite element models (ABAQUS)
- Designed and conducted experimental studies.
- 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.

Education

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

2017 – 2022 | Approved unanimously

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

Introduction to Git and GitHub, Google/Coursera | September 2022

Modern Big Data Analysis with SQL Specialization, Cloudera/Coursera | September 2022

This specialization included the following courses:

- Foundations for Big Data Analysis with SQL (Impala and Hive, Hue, HDFS and Amazon S3)
- Analyzing Big Data with SQL (SQL, Impala and Hive, Hue)
- Managing Big Data in Clusters and Cloud Storage (SQL, Impala and Hive, Hue, Amazon S3)

Applied Data Science with Python Specialization, University of Michigan/Coursera | May 2022

This specialization included the following courses:

- 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) (2019-2022)

Fulbright Scholarship for Research (2018). 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