MANUEL MADEIRA he/him

PhD student at EPFL

Lausanne, Switzerland
+41 76 583 99 24
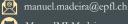manuel.madeira@epfl.ch
ManuelMLMadeira
manuel-madeira
Manuel ML Madeira

ABOUT ME

I am fascinated by the potential of Machine Learning to trigger scientific breakthroughs. I am mostly interested in addressing Generalization and Robustness in Deep Learning by incorporating domain knowledge. In my spare time, I enjoy sports, challenging myself, and learning new things from those confronts.

EDUCATION

2022- **EPFL (Switzerland)**
PhD in Computer Science
- Branch: Artificial Intelligence
- 1st semester project: "Diffusion-based generative models to detection/prediction problems in digital pathology"

2018 (Fall) **Tsinghua University (China)**
Mobility Programme
- Computer Science Department
- Emphasis on AI and Machine Learning courses

2015-2021 **Instituto Superior Técnico (IST) – ULisboa (Portugal)**
MEBiom – Integrated Masters in Biomedical Engineering
- BSc Final Grade: 19/20 (1st in class and 1st ever to reach this grade)
- MSc Final Grade: 19/20 (1st in class)
- MSc Thesis: "COCO Denoiser: Using Co-coercivity for Variance Reduction in Stochastic Convex Optimization" (Grade: 20/20)

EXPERIENCE

2021-2022 **Inductiva Research Labs**
Machine Learning Researcher
- Deep Learning to solve Partial Differential Equations
- Modeling Heat Diffusion and Coastal Dynamics using Deep Learning
- Generalization in Physics-Informed NNs

2021 **Institute for Systems and Robotics - Lisboa**
Scientific Research Scholarship
- Exploration of L-smoothness in first-order Stochastic Convex Optimization
- Theoretical developments on algorithmic analysis
- Implementation of several first-order stochastic optimization methods

2019-2020 **IST-ID: MEDI-VALUE Project**
Scientific Research Scholarship
- Transcribing interviews related to Health Technology Assessment in Portugal

2016-2017 **Faculty of Medicine - ULisboa**
Teaching Assistant of Histology
- Presentations on the contents and helping students on practical classes

PROJECTS

Machine Learning
- Human Protein Atlas Image Classification (Kaggle): classify subcellular protein patterns in human cells using CNNs
- Computer-Brain Interface: pattern-mining on EEG recordings using off-the-shelf signal processing methods
- Classifier to Biomedical Data: Tree Augmented Naïve Bayes from scratch
- K-partition Problem: evolutive computation approach

Robotics
- EMG-controlled Wheeled Mobile Robot: signal acquisition and processing
- Autonomous Navigation Strategy for Mobile Robots: computational implementation
- Direct and Inverse Kinematics of Serial Manipulators (6 DoF): computational implementation

Biomechanics
- Kinematic and Dynamic Analysis of Human Movement (Gait and Standing Long Jump): computational implementation

HONORS AND AWARDS

2016-2018 **ULisboa Merit Scholarship**
Best student in MEBiom BSc

2015-2020 **IST Diploma of Academic Excellence**
Top 10% in MEBiom
- Not received in 2018/2019 due to exchange semester

2009-2021 **National University Football Division** 2015-2021
National Football Division 2009-2016
Football player at highly competitive level

2009-2015 **Scholar Merit Award Crédito Agrícola**
Best student of the year in High School
- European Youth Parliament Portugal (2015) - National Finalist
- Biology Olympiad (2015) - National Finalist

LIST OF PUBLICATIONS

2021 COCO Denoiser: Using Co-coercivity for Variance Reduction in Stochastic Convex Optimization arXiv
- Accepted in OPT2021 (NeurIPS workshop)

SKILLS

LANGUAGES

Portuguese	English	Spanish	Chinese
Native	Fluent TOEFL iBT: 114	Conversational	Elementary (Tsinghua course)

PROGRAMMING

Python	Matlab
Java	Mathematica	R

FRAMEWORKS

Pytorch	Tensorflow
Git	CVX/CVXOPT	Abaqus

ADDITIONAL ACTIVITIES

2021 **LxMLS (Lisbon Machine Learning Summer School)**
Participant
- Attend lectures and practical talks from world renowned researchers
- Hands-on approach in lab sessions (mainly on NLP and RL topics)

2016-2018 **IST Biomedical Engineering Students Association**
Academic and Cultural Section
Collaborator (2016/2017) and Head (2017/2018)
- Organization of workshops, field trips and volunteering activities

2019-2020 **IST Students Association**
Football Team Representative
- Bridge between football team and academic bodies

2012-2017 **Banco Alimentar Contra a Fome (Food Bank)**
Volunteering
- Collecting food for people in need through campaigns in large supermarkets and distributors