ANDREA BOSIA

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EDUCATION

University of Sydney *Feb. 2023 -June 2024 (expected)*

Master of Science in Data Science (Major in Machine Learning)

- Relevant Courses: *Advanced Machine Learning, Deep Learning, Database Management Systems, Game Theory, Online Learning, Computer Security.*

Politecnico di Milano *Sept. 2017-Mar 2021*

Bachelor Degree in Computer Science and Engineering

- Relevant Courses: *Data Base, Software Engineering,Technologies for the Web, Data Structures and Algorithms, Fundamentals of Automatic Control.*

WORKING EXPERIENCE

Brain and Mind Center (University of Sydney) *Dec. 2023- Feb. 2024*

Research Internship

- I worked, together with a team of researchers, to advanced results in the field of reconstructing Natural Images from Brain Activities. I worked with the Natural Scene Dataset, a 7T dataset hosted on AWS accessible via S3. I leveraged the COCO dataset to extract image captions.
- I firstly reproduced the results obtained in previous research papers leveraging a node cluster for computational power. I implemented and fine tuned a stable diffusion model for image generation getting fMRI brain signal as input, and conditioned by a textual prompt.

Crown Building Casino (Sydney) *Aug. 2022- Apr. 2023*

Casual Worker

- I worked for Black&White at the Crown Building Casino in Sydney. This experience allowed me to sharpen my communication skills and taught me how to handle an hectic working environment and please demanding clients.

PROJECTS

Class-Conditional Label Noise Robustness 2023

- Working in a team I designed and implemented a classifier robust to class-conditional label noise. I evaluated the performance of two distinguished CNN architectures, ResNet18 and GoogLeNet, when trained with noisy labels.
- I implemented and compared three algorithmic strategies that leverage transition matrices. I investigated the estimation of transition matrices through anchor points.
- I evaluated the performances considering Accuracy, Precision, Recall and F1 score (achieving values ~ 0.9)

Ensemble Model for Multi Label Classification 2022

- In a team of 3 people I developed an ensemble model for multi label classification using PyTorch.
- The dataset consists of images annotated with a textual description. I leveraged the bi-modal input developing 2 classification models, one for the images (a CNN based on ResNet-34) and one for the text (a LSTM).
- After a series of ablation studies and hyperparameters tuning the model achieved an F1-score of 86% finishing in the top 10 of the Kaggle competition.

Desktop Application 2020

- In a team of 3 people I developed a desktop application reproducing the board game “Santorini”. Throughout the project I implemented a multi users, distributed software application provided of CLI and GUI (in Java). I adopted a variety of design patterns in order to produce a clean, encapsulated code. I developed a series of functional tests and load tests to validate the final software.

Web Application 2020

- With a teammate I design and implemented an Integrated Retail Management System for an E-commerce. I adopted a Model-View-Controller framework leveraging Java Servlets. I used Thymeleaf in order to provide Dynamic Content Generation. I worked on the DBMS ensuring the efficiency of the relational Data Base and its robustness from malicious attacks.

TECHNICAL SKILLS & TOOLS

Programming Languages: C, Java, JavaScript, Python, R, SQL, HTML, CSS, XML, JSP, Thymeleaf.
Software development: GitHub, Valgrind dynamic analysis tools, GDB debugger, TOMCAT, MySQL.
Big Data & Machine Learning: Numpy, Pandas, Sickit-Learn, Keras, PyTorch, TensorFlow, Seaborn, Tableau.
Certifications: Coursera Unsupervised Learning, Reccomenders, Reinforcement Learning (Mar. 2023)