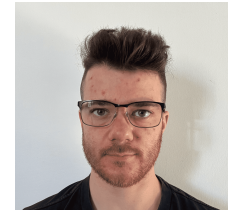


Riccardo Zuliani

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SUMMARY

Passionate AI/ML near graduation student with a strong background in deep learning, and computer vision. Skilled in Python, PyTorch, and various ML libraries. Excellent problem-solving, research, and collaboration abilities. I am a stubborn and determined person, with a desire to learn and test myself with new challenges to prove I am worth it.

EXPERIENCE

Probability and Statistics University Tutor

Oct 2023 – Jan 2024

University Ca'Foscari of Venice

Venice, Italy

- Frontal teaching that is explained both in the solution of exercises on the blackboard and in the solution of problems with the use of the computers.
- Reception of students in person and by e-mail.
- Support students in the use of R, especially in understanding the suitable tools for solving each problem.

Pizza Maker

Aug 2019 – Aug 2023

Pizzeria Irene

Volpago del Montello, Italy

- Spreading the doughs.
- Stuffing the pizzas.
- Management of the wood stove.

EDUCATION

University Ca'Foscari of Venice

Venice, Italy

M.S. in Computer Science, Data Management and Analytics

Sep 2021 – Jul 2024

Grade:

110L / 110

University Ca'Foscari of Venice

Venice, Italy

B.S. in Computer Science, Data Science

Sep 2019 – Jul 2021

Grade:

106 / 110

LANGUAGE SKILLS

Italian

Mother tongue

English

B2, intermediate

TECHNICAL SKILLS

Programming Languages: Python, C, C++, SQL, Java, PHP, F#, R.

Deep Learning Frameworks: PyTorch.

Libraries & Tools: NumPy, Pandas, Scipy, Scikit-learn, Matplotlib, Seaborn, OpenCV, NLTK, Git, Boost Graph Library (C++), Angular, MongoDB, Express and Hugging Face.

PROJECTS

Active Learning strategy using Graph Transduction Game

Oct 2023 – Present

Active Learning Master's Thesis Project

Python, PyTorch, matplotlib, seaborn

- Combination of Active Learning and Graph Transduction Game.
- Graph Transduction Game formulates the classification task as an evolutionary non-cooperative game between N players (samples) with M strategies (labels).
- To this end, the selection of samples to be labelled in the AL model, is based on:
 - Tracking the evolution of the entropy along the iteration of the aforementioned dynamical system.
 - Creating an ad-hoc payoff function s.t. similar samples (already seen) are discouraged to emerge in the subsequent iterations.

CBERTdp: Clustering BERT Embedding via Dot Product

Nov 2023 – Feb 2024

Natural Language Processing Project

Python, PyTorch, NLTK, Hugging Face, BERT, Dot Product

- Leveraging BERT-extracted embedding and clustering techniques to streamline the sentiment classification process.
- Cluster BERT embedding and classify sentiment by computing the dot product between a new sentence embedding and cluster centroids.

NYC Fire Incident Dispatch Analysis

Oct 2023 – Jan 2024

Statistical Inference Project

R, R-Studio

- The Fire Incident Dispatch Data file contains data that is generated by the Starfire Computer Aided Dispatch System.
- It covers information about the incident related to the assignment of resources and the Fire Department response to the emergency.
- Two analysis are proposed:
 - Predict the `INCIDENT_RESPONSE_SECONDS_QY` which is the time difference between the `FIRST_ON_SCENE_DATETIME` and `INCIDENT_DATETIME`.
 - Predict the `EMERGENCY_TIME` which is the time difference between the `FIRST_ON_SCENE_DATETIME` and `INCIDENT_CLOSE_DATETIME`.
- Starting from linear regression we change the task formulation to binary classification since the linear assumptions were not satisfied.

PageRank & HITS Comparison Benchmark

Jun 2023 – Sep 2023

Information Retrieval Project

C++

- Compare the prestige computation of given pages graph using an implementation of PageRank and HITS.

Silhouette-based space carving

Jun 2023 – Sep 2023

Computer Vision Project

Python, OpenCV, Numpy

- Implement a technique known as "space carving" to reconstruct the shape of a 3D object from multiple photographs taken at known but arbitrarily distributed viewpoints.
- An object is placed on top of a rotating plate together with a custom-designed fiducial marker.
- A calibrated camera is placed in front of the object capturing the scene throughout an entire rotation.
- The volume occupied by the object is represented by a discrete set of voxels distributed on a cube of size $N \times N \times N$.
- At each frame, a set of 3D rays exit the camera starting from the optical center and passing through each pixel of the image.
- If a ray reaches the background without touching the object, all the intersected voxels can be "carved".
- If a ray reaches the object, at least one of the intersected voxels is part of the object, so they must not be removed from the set.

Video Classification with Convolutional Neural Network

Jun 2022 – May 2023

Deep Learning Project

Python, PyTorch, OpenCV, YoutubeDL

- Lite version of the following paper: Large-scale Video Classification with Convolutional Neural Networks.
- Implementation of approaches for extending the connectivity of a CNN in the time domain to take advantage of local spatiotemporal information and suggest a multiresolution, foveated architecture as a promising way of speeding up the training.

Maximum Weighted Matching VS Auction Algorithm

Jun 2022 – Sep 2022

Advanced Algorithm Project

C++, Graph Boost Library

- Comparison of implementation of Auction Algorithm and the Maximum Weighted Matching from the Boost Graph Library.

Dash AutoML Benchmark

Jan 2021 – Sep 2021

Bachelor's Thesis Project

Python, Dash, Numpy, scikit-learn

- Benchmark for some automated machine learning: AutoSklearn, MLJAR, H2O, TPOT, and AutoGluon.
- All visualized via a responsive Dash Plotly Web Application.