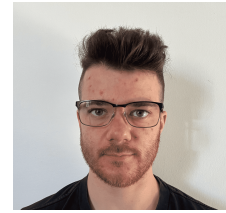


# Riccardo Zuliani

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## SUMMARY

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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

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### 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

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### University Ca'Foscari of Venice

Venice, Italy

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

Sep 2021 – Jul 2024

Mark:

x / 110

### University Ca'Foscari of Venice

Venice, Italy

B.S. in Computer Science, Data Science

Sep 2019 – Jul 2021

Mark:

106 / 110

## LANGUAGE SKILLS

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Italian

Mother tongue

English

B2, intermediate

## TECHNICAL SKILLS

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**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

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### 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.