Mohsen Rahimi

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PROFESSIONAL EXPERIENCE

DATRIX AI SOLUTION GROUP **Bergamo, Italy**
Data Scientist **Nov 2022 – June 2023**

- Spearheaded the development of a tailored Adversarial Machine Learning solution for NLP, enhancing interpretability through innovative techniques and research.
- Implemented a tripartite system for model interpretation, combining adversarial attack samples, local SHAP value analysis, and global interpretability insights, which resulted in a marked reduction in bias and model interpretation variability.
- Made a contribution (Creating a new Module for Interpretability) to the Italian Government's CybersecH project named AIA Guard.

DATRIX AI SOLUTION GROUP **Bergamo, Italy**
ICT Developer Intern **Nov 2022 – June 2023**

- Pioneered the integration of Explainable AI techniques into existing NLP and text classification models, successfully enhancing transparency and stakeholder trust in automated decision-making processes.
- Led a cross-functional team in the development and deployment of a secure, scalable cloud-based infrastructure, leveraging technologies such as Kubernetes and Google Cloud to support high-performance data analytics and machine learning operations.
- Conducted rigorous code reviews and provided mentorship in best practices for software development, resulting in a 20% reduction in bugs and a more robust, maintainable codebase.

UNIVERSITY OF BERGAMO **Bergamo, Italy**
Scientific Assistant **Jan 2021 – Jan 2022**

- Orchestrated a comprehensive EDA and data cleaning process on ISTAT's insurance data, involving imputation of missing values, outlier capping, removal of duplicate observations, and in-depth operational evaluation.
- Engineered a targeted algorithm to streamline customer retention offers, optimizing insurance retention strategies.
- Employed data visualization techniques and demographical data differentiation to enhance customer segmentation and understanding.

Selected Project Experience

- Election Pulse: Decoding Public Sentiment and Topics from Obama's 2020 Tweets
  - The project aims to unravel the public sentiment and key topics concerning the 2020 U.S. presidential election, as reflected in discussions around Barack Obama's Twitter timeline. Utilizing RStudio for topic modeling and sentiment analysis, the study will dissect tweets and related engagements to gauge public opinion on the presidential race, offering insights into the nation's political pulse during a pivotal election year.
- Unveiling Shadows: The Socio-Economic Roots of Hate Incidents in the US
  - project investigates the link between socio-economic factors and hate crime rates in the US, drawing on a FiveThirtyEight analysis. By exploring variables such as income inequality, education levels, unemployment, and political leanings, this study aims to pinpoint the drivers of hate incidents, revealing how socio-economic disparities may foster environments conducive to such crimes, particularly in urban areas.
- Alpine Retreats: Managing Big Data for Lombardy's Mountain Cabins
  - In this project I employed big data tools to map and analyze mountain cabin accommodations in Lombardy. The study begins with dataset acquisition and database creation in PostgreSQL, followed by data visualization and SQL queries to determine cabin capacities and features. Geospatial analysis in QGIS and PostGIS identifies cabins fit for climbers and large groups. Further, the data is integrated into Neo4j to model relationships and facilitate complex queries, with findings presented through Google Data Studio.

EDUCATION

Università degli Studi di Bergamo **Bergamo, Italy**
Master of Arts in Economics and Data Analysis (Data Science Curriculum) **Oct 2020 – Oct 2023**
GPA: **91/110**
Thesis Subject: **"Enhancing Trust in AI: An Exploration of Interpretability Systems in Natural Language Processing Models"**

University of Tehran, College of Engineering **Tehran, Iran**
Bachelor of Science in Rock mechanical Engineering **Oct 2012 – June 2018**
Thesis Subject: **"Analyzing the difference between types of Grouting and its data on tunnelling"**

PUBLICATION

- Rahimi, M., De Poli, G., Masella, A., & Bregonzio, M. (2023). *"Why did you fail? An interpretability system for NLP models."* In Proceedings of ICDSST 2023 on Decision Support System in an Uncertain World: The Contribution of Digital Twins. Datrix S.p.A., Milan, Italy. Available at this link.

RESEARCH INTERESTS

- Explainable AI, Multimodal Learning for Image, text and speech processing, Visual Computing, Computer vision, Text Classification and Sentiment Analysis, Natural Language Processing, Language Modeling, Adversarial Attacks, Cybersecurity

ADDITIONAL INFORMATION

- **Programming Skills:** Python, R. Java, C/C++
- **AI Frameworks/Libraries:** Tidymodels, H2O, TensorFlow/Keras, Pytorch, Numpy, Pandas
- **Tools:** Git, Linux, Docker, Kubernetes, Google Cloud, LaTeX
- **Web:** Vue.js, HTML/CSS/JS/jQuery, MySQL/PostgreSQL/MongoDB
- **Languages:** Persian (Native), English (Proficient), Italian (Intermediate)
- **Soft Skills:** Effective Communication, Problem Solving, Team Collaboration, Adaptability, Conflict Resolution
- **Awards:** First Place at the Stat-Hackathon Competition, Università degli Studi di Bergamo, May/June 2020

ADDITIONAL EXPERIENCE

Teacher, Salam High School, 2012 - 2016

- *Teaching C++ Programming:* Guided high school students through basic C++ fundamentals, focusing on simple data types, control structures, and introductory concepts in object-oriented programming.
- *Teaching Python Programming:* Introduced Python to high school students with an emphasis on readable syntax, basic scripting, and the use of fun libraries to engage young learners in programming basics.
- *Teaching Mathematics:* Provided high school students with lessons in algebra, geometry, and pre-calculus, fostering problem-solving skills and critical thinking through interactive and practical examples.