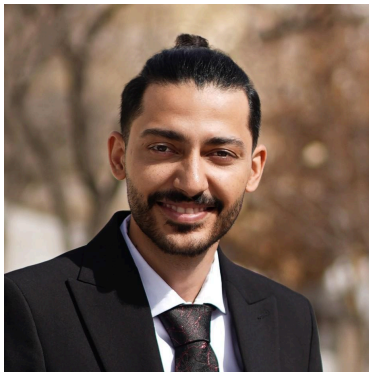


Mehrdad Hassanzadeh



EDUCATION

- Master's of Data Science, Sapienza University of Rome (SUR) *Fall 2021 - ongoing*
 - Acquired credits: 84 / 120, GPA = 28.41 / 30
 - Big Data Computing - 30 e lode
 - Cloud Computing - 30 e lode
 - Algorithmic Methods of Data Mining - 30 e lode
 - Smart Environments - 30 e lode
 - Data Management for Data Science - 30 e lode
- Master's of Engineering in Computer Science, SUR *Fall 2020 - Spring 2021*
- Bachelor's of Computer Engineering - Software, University of Bojnord (UB) *Fall 2015 - Fall 2019*

TEACHING ASSISTANTSHIP

- Algorithmic Methods of Data Mining, SUR *Fall 2022, Fall 2023, Fall 2024*
- Fundamentals of Computer and Programming, UB *Fall 2016, Fall 2017, Fall 2018*
- Advanced Programming, UB *Fall 2018*
- Data Structures, UB *Fall 2018*

COURSE PROJECT & PRESENTATIONS

- Article Search Engine *Spring 2023*
 - Designing a search engine to find the most relevant articles based on the user's query and taking into account the importance of the articles based on their citation relationships available here.
 - Topics engaged: graph analysis, information retrieval techniques, MapReduce approach to handle big data using PySpark.
- A review over "Infra-Red Uplink indoor communications" topic *Spring 2023*
 - Reading papers and writing and presenting a review of the topic.
- Real time sentiment analysis and classifying the tweets posted on Twitter *Summer 2022*
 - Creating an architecture that makes use of AWS services to scrape tweets, perform sentiment analysis, and classify tweets all while balancing load across the EC2 instances that are performing the analysis.
 - Retrieving tweets posted online using the provided Twitter API and the Python-based Tweepy library.
- Classifying data flows over a network *Summer 2022*
 - Attempting to classify the protocol used for data flow between two end points based on the data of packets sent over a network.

- Insurance claims over cars *Spring 2022*
 - In this project using the dataset we have trained two Machine Learning algorithms to predict if the customer will claim his/her insurance or not and compare the result of these two algorithms.
- Designing a search engine over top anime series *Fall 2021*
 - The data should have been scraped from webpages and a search engine built on top of it.
 - Topics engaged: multiprocessing, web scraping, information retrieval techniques
- Analysis of an online market store website, System Analysis and Design *Spring 2018*
 - Determining the persona of the system and describing use cases
 - Designing the database and classes within the system
- Data mining project using Instacart online store dataset *Fall 2018*
 - Identification of top-selling products, order profiles and patterns, pairing products,
 - measuring processing time, timeseries forecasting, and order collection time prediction
- Sequential Pattern Mining Using a Bitmap Representation, Final Project I *Spring 2020*
 - This paper extends “Sequential Pattern Mining using A Bitmap Representation” by Ayres et al., presented at KDD '02. We propose a more efficient method for mining sequential patterns, featuring an improved implementation structure, optimized dataset search, and reduced time complexity. Our Java-coded algorithm uses less storage for fetching and analyzing RAM data.
- Data Mining Applications in Banking System, Final Project II *Spring 2020*
 - This is based on the paper “A Data-Driven Approach to Predict the Success of Bank Telemarketing; Moro S. et al., Decision Support Systems 62(2014):22-31”. With the objective of expediting and improving the approval process, we use a Bee Colony algorithm coded in Python on the same dataset as used in the original paper. This system personalizes the loan value for every customer and determines the best and the worst customers.

CAMPUS ACTIVITIES AND SERVICES

- Python Crash Course instructor for the Data Science program, SUR *Fall 2023, Fall 2024*
 - This is a hands-on introductory course to the Python programming language and other tools, meant to give the student a comprehensive start into the master's in Data Science.
- Founder and director of ACM Club “RAVENS”, UB *Fall 2019*
 - I founded this club to organize and synergize students' programming activities. We hold weekly ACM prep sessions for 15+ students who are passionate about programming.
- Administrator of the ACM qualification competitions, UB *Fall 2017- Fall 2019*
 - Developing contest questions, conducting, and concluding internal competitions
- Students' Scientific Association representative of the Department of Computer Engineering department, UB *Fall 2019*
 - As the liaison between students and the university faculty and staff, I work to address educational, social and financial challenges faced by the student body.

PROGRAMMING CONTEST ACHIEVEMENTS

- Ranked 1st in the ICPC qualification contest in UB as “ravenS the best” *Dec 2019*
- Member of the UB ICPC team for West Asia Continent, regional contests, Tehran, Iran *Nov 2019*
- Ranked 4th in National ICPC contest, Team UBCF, Sheikh Bahaei University, Isfahan, Iran *Mar 2019*
- Ranked 2nd in National ICPC Contest, Team UBCF_1, Yadegar Imam University, Tehran, Iran *Feb 2019*
- Member of the Computer Engineering Olympiad team of UB for National Scientific Olympiad *Apr 2018*

PRACTICAL WORK EXPERIENCE

- Working as a researcher in the domain of Federated Learning *Spring 2023 - Present*
 - As a researcher in Federated Learning, I focus on the challenges posed by heterogeneous data across clients. My work examines how diverse data distributions from various clients such as mobile and edge devices can collaboratively train machine learning models while maintaining data privacy. I analyze the effects of non-IID (non-independent and identically distributed) data and develop algorithms to manage these variations for robust and efficient training. My research aims to improve the implementation of Federated Learning in real-world applications where data heterogeneity is a critical factor.
- Programming languages tutor *Fall 2017 - Present*
 - I have been teaching Python, C++, C#, and Java to undergraduate students
 - An ambassador of Python programming tutors on [Superprof.com](https://www.superprof.com)

SOFTWARE & PROGRAMMING SKILLS

- Programming languages
 - Python, C++, C#, Java, JavaScript, Assembly, HTML and CSS
 - SQL - Postgresql
 - NoSQL - MongoDB, DynamoDB
- Software & Packages & Platforms
 - Amazon Web Services: Ec2, SQS, DynamoDB, S3
 - Numpy, Pandas, Sklearn, Tensorflow, Keras, Flower, Boto3, Beautiful Soup,
 - MapReduce, PySpark
 - Microsoft Office Suite (Word, Excel, PowerPoint), Latex
- Algorithms
 - Clustering Algorithms (e.g. K-means, K-means++, DBSCAN)
 - Classification Algorithms (e.g. Logistic Regression, Support Vector Machine)
 - Decision Trees Algorithms (e.g. Random Forests, XGBOOST)
 - Neural Networks (e.g. Convolutional Neural Networks)
 - Federated, Distributed, Ensemble Learning
 - Big Data computing
 - Web scraping