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Mehrdad Hassanzadeh

ABOUT ME

Data Scientist with a master's degree in Data Science from Sapienza University of Rome, specializing in machine learning and distributed systems. Skilled in designing and implementing federated learning algorithms and data-driven solutions. Strong analytical background, collaborative mindset, and commitment to producing reliable, high-quality research outcomes.

EDUCATION AND TRAINING

Master of Science in Data Science

Sapienza University of Rome [09/2021 – 07/2025]

City: Rome | **Country:** Italy | **Final grade:** 110/110 | **Thesis:** A Thorough Assessment of the Non-IID Data Impact in Federated Learning

Relevant Coursework: Algorithmic Methods of Data Mining, Data Management, Big Data Computing, Cloud Computing, Smart Environments, Neural Networks, Optimization Methods for Machine Learning

Bachelor's of Computer Engineering - Software

University of Bojnord [09/2015 – 02/2020]

City: Bojnord | **Country:** Iran

RESEARCH EXPERIENCE

[03/2024 – 07/2025]

Federated Learning Researcher

- Worked as part of a research group consisting of Prof. Ioannis Chatzigiannakis, Prof. Aris Anagnostopoulos, Prof. Andrea Vitaletti and Dr. Daniel Mauricio Jimenez Gutierrez, focusing on federated learning with non-IID data distributions
- Investigated how different types of heterogeneity (label, feature, quantity, and spatio-temporal) affect model performance, robustness, and fairness in decentralized learning.
- Designed and executed large-scale simulation experiments in Python, leveraging AWS distributed computing to scale evaluations, and contributed to the development of aggregation strategies to mitigate performance degradation under severe non-IID settings.
- Collaborated with the research group to bridge theoretical analysis with practical implementation, advancing methods for federated learning in challenging real-world data scenarios.

TEACHING EXPERIENCE

[07/2023 – Current]
Private Tutor – Python Programming, Data Analysis, and Machine Learning

- Provided one-on-one tutoring to 50+ students at varying levels, focusing on Python programming, data analysis (NumPy, Pandas, visualization), and introductory machine learning applications.
- Designed hands-on lessons using real-world datasets and tailored exercises, earning consistent 5/5 student evaluations for clarity and effectiveness.

[09/2023 – 02/2025]
Teaching Assistant - Algorithmic Methods of Data Mining

- Supported 90+ students annually across three course offerings by answering questions on Slack, clarifying concepts, and providing written explanations and references.
- Assisted student learning in core topics including web scraping, model development, recommendation systems, and graph analysis.
- Designed, administered, and graded programming assignments and projects, ensuring clear requirements, fair evaluation, and constructive feedback to strengthen applied data mining and machine learning skills.

[09/2024 – 09/2025]
Instructor - Python Pre-Course

- Led the official Data Science master's programming pre-course for two consecutive years, teaching Python to full cohorts of over 70 newly admitted master's students annually in a classroom setting
- Taught core programming and essential Data Analysis tools (NumPy, Pandas, Matplotlib) for master's curriculum preparation
- Designed and delivered hands-on exercises and projects focused on data wrangling and practical applications

[09/2016 – 01/2020]
Teaching Assistant - Programming Courses

- Selected six times as Teaching Assistant for Fundamentals of Programming, Advanced Programming, and Data Structures.
- Conducted weekly 2-hour support sessions to clarify course material, answer student questions, and address learning difficulties.
- Guided students through hands-on programming exercises to strengthen understanding and practical application of concepts.

PUBLICATIONS

[2025]
A Thorough Assessment of the Non-IID Data Impact in Federated Learning (Under Review)

Authors: Daniel M. Jimenez-Gutierrez, Mehrdad Hassanzadeh, Aris Anagnostopoulos, Ioannis Chatzigiannakis, Andrea Vitaletti

[2025]
Clust-PSI-PFL: A Population Stability Index Approach for Clustered Non-IID Personalized Federated Learning (Under Review)

Authors: Daniel M. Jimenez-Gutierrez, Mehrdad Hassanzadeh, Aris Anagnostopoulos, Ioannis Chatzigiannakis, Andrea Vitaletti

[2025]
FedLECC: Cherry-Picking Clients in Federated Learning through Clustering and Personal Data Economy (Under Review)

Authors: Daniel M. Jimenez-Gutierrez, Giovanni Giunta, Mehrdad Hassanzadeh, Aris Anagnostopoulos, Ioannis Chatzigiannakis and Andrea Vitaletti

HONOURS AND AWARDS

[12/2019] Sharif University of Technology
ICPC Asia Tehran Regional Contest – 22nd Place (out of 63 universities) Represented University of Bojnord in its first-ever ICPC West Asia Regional Contest. Solved complex algorithmic problems under time constraints.

[12/2019] University of Bojnord

ICPC Programming Contests – 1st Place (Province Level) Achieved 1st place in consecutive province-level ICPC programming contests. Demonstrated strong expertise in algorithms, data structures, and collaborative problem-solving.

LEADERSHIP & SERVICES

[01/2019 – 02/2020]

Founder & Director – Programming Club "RAVENS"

Founded the university's first programming club; organized weekly ICPC-style training sessions for 20+ members to promote competitive programming and collaborative problem-solving.

[09/2016 – 02/2020]

Administrator – Programming Contests (University of Bojnord)

Managed and coordinated two province-level programming contests, overseeing end-to-end execution from problem design to technical setup and evaluation.

[09/2019 – 02/2020]

Student Representative – Scientific Association of Computer Engineering (University of Bojnord)

Served as student representative, advocated for student needs, organized academic workshops, and supported initiatives to enhance the learning experience.

LANGUAGE SKILLS

Mother tongue(s): Persian

Other language(s):

English

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Python / SQL / Pandas / Numpy / Scipy / Matplotlib / Searborn / Scikit -learn / Tensorflow / Pytorch / Supervised & Unsupervised Learning / Predictive Modelling / Statistical Modelling / Deep Neural Networks (DNN) / Convolutional Neural Networks (CNN) / Natural Language Processing (NLP) / Hyperparameter Tuning / ETL / Data Cleaning & Transformation / Data Wrangling / Feature Engineering / Exploratory Data Analysis / AWS (EC2, S3, SQS, DynamoDB) / Version Control (Git) / REST API