Zulfiya Usmonova

zulfiyau5555@gmail.com, linkedin.com/in/zulfiya-usmonova, github.com/UsmonovaZulfiya

Education

New Uzbekistan University — Tashkent, Uzbekistan
GPA 4.08/4.5, Class rank 4/115 — *Oct. 2021 – Jun 2025*

- Honor of University Award 2023 - for achievements and high academic record
- Top Student Award 2022 - for the highest academic record
- Actively participated in workshops and seminars (held by professors and chairmen of TUM, Cornell, and MIT)
- Attending Mathematics for Machine Learning and Homological Algebra courses

Comenius University in Bratislava — Bratislava, Slovakia
Exchange semester — *Feb. 2025 – Jun 2025*

- NSP Scholarship by Slovak Republic
- Current Coursework: Neural Networks, Statistical Methods in AI, Introductory Bio-statistics, Combinatorics and Graph Theory, Discrete Mathematics 2
- Actively involved in peer-review conferences and seminars held by AI industry professionals (ex. Google DeepMind founders).

Skills

Languages & Frameworks: Python (Matplotlib, Pandas, Scikit-learn, TensorFlow), SQL, C++

Related University Coursework: Introduction to Machine Learning, Artificial Intelligence, Linear Algebra, Probability Models, Practical Statistics, Algorithms & Data Structures

Research experience

Bachelor's Thesis — Sep. 2024 – present
Investigating the Influence of Voting Mechanisms in LLM-Based Multi-Agent Systems — *Tashkent, Uzbekistan*

- Developing generative-agent architectures powered by LLMs to simulate diverse, demographically informed agent populations (age, gender, education) by using ChatArena framework as a foundation.
- Establishing controlled baseline experiments and introducing alternative voting mechanisms (encouraging/discouraging statements) to measure their impact on collective decision-making.
- Conducting repeated simulations to assess changes in consensus, variance, and stability, producing statistically robust insights.
- Working on fairer, more transparent decision-making frameworks for both simulated scenarios and potential real-world applications.
- Abstract available: https://github.com/UsmonovaZulfiya/bachelor-s-thesis.git

Working Paper — Dec. 2024 – Present
Neurosymbolic AI in Multi-Agent Systems for Scalable and Explainable Intelligence — *Tashkent, Uzbekistan*

- Investigating how Neurosymbolic AI enhances Multi-Agent Systems (MAS) by integrating symbolic reasoning with neural networks, improving decision-making efficiency, transparency, and adaptability.
- Reviewing over 30 research papers to identify emerging trends in Large Language Models (LLMs), Knowledge Graphs, Logical Neural Networks, Reinforcement Learning with symbolic priors, and Explainable AI (XAI) in MAS.
- Abstract available at: https://github.com/UsmonovaZulfiya/nsai-mas-review-paper.git

Book Chapter — Dec. 2023 – Apr. 2024
Cloud Computing for Smart Education — *CRC Press, Taylor&Francis Group*

- Transformative Pedagogy: Collaborative Learning with Cloud Architecture and Virtual Programming Labs.
- Studied the use of cloud-based platforms to enable remote learning, data storage, and real-time collaboration among students and educators.
- Highlighted technical implementations of cloud computing for educational purposes, with a focus on improving accessibility and encouraging an interactive, scalable learning experience.
- Abstract available: https://bit.ly/book-chapter-link

Work Experience

AI Researcher Intern January. 2025 – February. 2025
UZINFOCOM *Tashkent, Uzbekistan*

- Developed and optimized multi-agent chatbots using frameworks like LangChain, LangGraph, and AutoGen, focusing on seamless integration and advanced NLP capabilities.
- Implemented SQL-based data management solutions (schema design, indexing, query optimization) for real-time chatbot data retrieval.

Data Science Intern Apr. 2024 – Jun. 2024
MAAB Innovation *Tashkent, Uzbekistan*

- Applied advanced SQL for data extraction and transformation, creating complex queries that streamlined data analysis processes, reducing processing time by 10%.
- Created interactive dashboards and reports in Power BI, allowing teams to monitor KPIs in real-time, enhancing visibility and tracking of project performance.

Leadership and Service

Huawei ICT Academy Ambassador Sep. 2024 – Present
Ambassador for New Uzbekistan University

TechnovationGirls Student Ambassador Sep. 2023 – Jun. 2024
Ambassador for Uzbekistan Chapter

Education Minister(EM) and General Secretary(GS) May 2022 – Apr. 2024
Student Council of New Uzbekistan University

TechnovationGirls 2023 Team Mentor Sep. 2022 – Jun. 2023

Professional Activities

Summer School in Math

- Participation in Summer School in Math (Integrable Systems Related to Reflection Groups in Algebra, Geometry, and Topology) helped to get into the pure core of mathematics and gave me a chance to broaden my horizon about the current trends in the science world. Particularly, by meeting professors Pavel Etingof (MIT) and Yuri Berest (Cornell) I was able to get useful insights on the matters of math and its importance in my future career as a Data Scientist.

Seeds for the Future Global Competition 2nd place (Huawei) Sep. 2023 – Jan. 2024

- Developed a smart filtering system using IoT sensors and embedded programming, enhancing data collection and processing accuracy for environmental monitoring.
- Conducted extensive research and data analysis on past IoT projects to inform design improvements, contributing to a 20% increase in system efficiency.

AI Hackathon by Machine Learning Community of Uzbekistan
ML Engineer *Hackathon*

- Developed a model that suggests the medicine to the inserted diagnosis by using the Naive-Bayes model.

NASA Space Apps Challenge 2023
Winner team *Hackathon*

- Collected information about air pollution from the sources provided by NASA.
- Made a survey that was focused on questions regarding the effect of air pollution on the citizens of Tashkent.