

# Umid Suleymanov

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Certified Tensorflow developer, a PhD working as graduate research assistant at Virginia Tech and previously senior data scientist with eight peer-reviewed publications and two times finalist at International Data Analysis Olympiads, obtaining 16th place among 2187 teams. Proven practical experience in deep learning, machine learning, privacy preserving machine learning, ethical AI, natural language processing, predictive modeling, and communication.

## EDUCATION:

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**Virginia Tech** **2024 – 2029**  
*Doctor of Philosophy in Computer Science and Applications*  
*Research Assistant*

**Khazar University** **2019 – 2021**  
*Master of Science in Computer Science*  
**First Class Honors Degree / GPA: 4/4**

**ADA University** **2013 – 2018**  
*Bachelor of Science in Computer Science*  
**Honors: Cum Laude / GPA: 3.72/4**

## PROFESSIONAL EXPERIENCE:

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**Graduate Research Assistant, Virginia Tech, USA** **August 2024 – Present**

- Researching and implementing meta learning and few shot learning for preparing defenses against zero-day attacks. Built a prototypical neural network for few shot learning.
- Published a paper on Deep Unlearning of Breast Cancer Histopathological Images for Enhanced Responsibility. Researching Machine Unlearning techniques for deep learning models which allow certain data points to be forgotten after the model has been trained for privacy concerns.
- Working on Membership Inference Attacks (MIA) to measure the privacy leakage of various machine learning models.
- Contributing to the development of AI systems that are ethical, reliable, and secure.

**Instructor of Computer and Information Sciences, ADA University** **January 2023 – August 2024**  
**Instructor, ADA University** **January 2022 – May 2022**

- Held Intro to Big Data Engineering, Object-Oriented Analysis and Design, Software Design Patterns courses. Developing syllabi and instructional materials.
- Joined Center for Data Analytics and Research group, currently working on LLMs for Azerbaijani language.
- Developed instructional materials, exams, assignments in Blackboard Learning Management System

**Senior Data Scientist, E-Gov Development Center** **June 2022 – January 2023**

- Developed sentiment analysis model for measuring user satisfaction, which reduced 12 hours per week of manual labeling and analysis time.
- Trained a machine learning model to detect and anonymize certain special nouns. Modeled the problem as a named entity recognition task. Improved the process speed by 32%.
- Built a machine learning model to predict customer waiting time and notify users in the queue leading to a reduction of 16% in queue-related complaints.

**Leading Data Scientist, E-Gov Development Center** **November 2019 – June 2022**

- Generated pretrained word embeddings and applied them to sentiment analysis. Worked with a text corpus of 164 million tokens. Improved the accuracy of previous model by 4%.
- Strategized full machine learning lifecycle: predictive models, development, new ideas inducing, proof of concepts, implementation in the production environment, monitoring.
- Wrote language-specific text analyzers in Elasticsearch search engine. Increased the click-through rate by 6%.

## Data Engineer, E-Gov Development Center

July 2018 – November 2019

- Identified ways to improve data reliability, efficiency, and quality. Mainly queue and NLP datasets.
- Implemented data acquisition, preprocessing, transformation and storage routines.
- Gathered business requirements and translated them to data science approaches.

## Research Assistant, Center for Data Analytics Research

December 2017 – May 2018

- Worked on the text classification project and automated analysis of news articles, which involved training machine learning / deep learning algorithms for classification, and analysis.
- Published a research paper in IEEE AICT Conference

## HONORS AND ACHIEVEMENTS:

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- McKinsey Forward Program 2023
- IELTS Academic 8.0 2022
- Tensorflow Developer Certificate 2021
- Instructor at 30 Days of ML | Kaggle, Google 2021
- Finalist at International Data Analysis Olympiads - 16<sup>th</sup> place amongst 2187 teams 2019
- First place at AzInTelecom Hackathon (Computer Vision Solution) 2018
- Honorable Mention at the ACM ICPC North-Eastern European Regional Contest 2015

## RELEVANT SKILLS: (more details at: [github.com/usuleymanov](https://github.com/usuleymanov) )

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*Programming:* Python, Tensorflow, PyTorch, Keras, NumPy, pandas, SQL, Tableau, Gensim, Elasticsearch, NLP, Docker, Version Control, Cloud, Applied Machine Learning, Deep Learning, Spark, BigQuery, AutoGluon

## PUBLICATIONS:

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- L.Aliyeva, N.Abdullayev, **U.Suleymanov**, S.Zarbiyeva, I.Huseynov, I.Kanovski, Deep Unlearning of Breast Cancer Histopathological Images for Enhanced Responsibility in Classification. The 18th IEEE International Conference on Application of Information and Communication Technologies, Italy 2024. (accepted)
- T. Alizada, **U.Suleymanov**, Z.Rustamov, Contextualized Word Embeddings in Azerbaijani Language. The 18th IEEE International Conference on Application of Information and Communication Technologies, Italy 2024. (accepted)
- **Suleymanov U.**, Huseynov, V., Manafova, I., Mammadli, A., Jafarov, T. (2023). Instance Segmentation of Handwritten Text on Historical Document Images Using Deep Learning Approaches. In: Hemanth, D.J., Yigit, T., Kose, U., Guvenc, U. (eds) 4th International Conference on Artificial Intelligence and Applied Mathematics in Engineering. ICAIAME 2022. Engineering Cyber-Physical Systems and Critical Infrastructures, vol 7. Springer, Cham. [https://doi.org/10.1007/978-3-031-31956-3\\_20](https://doi.org/10.1007/978-3-031-31956-3_20)
- Huseynov K., **Suleymanov U.**, Rustamov S., Huseynov J. (2021) Training and Evaluation of Word Embedding Models for Azerbaijani Language. In: Digital Interaction and Machine Intelligence. MIDI 2020. Advances in Intelligent Systems and Computing, vol 1376. Springer, Cham. DOI: [https://doi.org/10.1007/978-3-030-74728-2\\_4](https://doi.org/10.1007/978-3-030-74728-2_4)
- **Suleymanov U.**, B. K. Kalejahi, E. Amrahov, and R. Badirkhanli, "Text classification for Azerbaijani language using machine learning," Computer Systems Science and Engineering, vol. 35, no.6, pp. 467–475, 2020. DOI: <https://doi.org/10.32604/csse.2020.35.467>
- Mammadli S., Huseynov S., Alkaramov H., Jafarli U, **Suleymanov U.** and Rustamov S. 2019. Sentiment Polarity Detection in Azerbaijani Social News Articles. International Conference Recent Advances in Natural Language Processing (RANLP 2019) 2-4 September 2019, Varna, Bulgaria. DOI: [https://doi.org/10.26615/978-954-452-056-4\\_082](https://doi.org/10.26615/978-954-452-056-4_082)
- **Suleymanov U.**, Rustamov, S., Mustafali A., Zulfugarov M., Orujov O., Musayev N., Alizade A.. 2018. Empirical Study of Online News Classification Using Machine Learning Approaches. IEEE 12th International Conference on Application of Information and Communication Technologies Conference Proceedings. Almaty, Kazakhstan. DOI: <https://doi.org/10.1109/ICAICT.2018.8747012>
- **Suleymanov U.** and Rustamov S. 2018. Automated News Categorization using Machine Learning methods. Aegean International Textile and Advanced Engineering Conference (AITAE 2018) 5–7 September 2018, Lesvos, Greece. DOI: <https://doi.org/10.1088/1757-899X/459/1/012006>

## CONFERENCES:

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- 8th Machine Intelligence and Digital Interaction – MIDI Conference, 9-10 December 2020, Warsaw, Poland
- International Conference Recent Advances in Natural Language Processing (RANLP 2019) 2-4 September 2019, Varna, Bulgaria
- IEEE 12th International Conference on Application of Information and Communication Technologies Conference (AICT2018), 17-19 October 2018, Almaty, Kazakhstan.
- International Conference on Artificial Intelligence for Digital Governance (AI4DIGIGOV), 26-28 April 2021, Online Conference
- International Conference on Artificial Intelligence and Applied Mathematics in Engineering – ICAIME (2022), 21-22 May, Baku, Azerbaijan

## INVITED TALKS AND PROFESSIONAL SERVICES:

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- **Artificial Intelligence and its Implications for Accessibility** at "Elevate & Innovate: Discussing the Challenges and Opportunities in the Digital Age" organized by ADA University and Azercell (May 2023)
- **Judge** from Computer Science Domain at the local selection process for Intel International Science and Engineering Fair (ISEF) (Feb. 2023)
- **Machine Learning and its Applications** organized by Azerbaijani Engineers Union (Mar. 2023)
- **Tutorial on Word Embeddings and their Applications in Sentiment Analysis** at Concentrated Data Science Bootcamp organized by Ministry of Science and Education (Sep. 2022)
- **Judge** at Bilim Baku Science Fair (Sep. 2022)
- **Tutorial on Intermediate Machine Learning** at Kaggle 30 days of Machine Learning organized by Google Developers Group Baku (Aug. 2021)
- **Tutorial on Applications of Machine Learning in Public Services** at International Conference on Artificial Intelligence for Digital Governance (AI4DIGIGOV) (Apr. 2021)