

# Ali Asgarov

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🎓 Ali Asgarov    🌐 aliasgerovs.github.io

## Research Interests

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I work in the areas of computer vision and natural language processing, with a primary focus on multimodal learning and vision-language models. My research interests include:

- Reasoning in vision-language models
- Cross-modal retrieval across images, text, video, and audio
- Structured information extraction from multimodal data
- Knowledge representation for multimodal reasoning

## Education

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**Virginia Tech** Aug 2024 – Present

*PhD in Computer Science*

- **GPA:** 4.0/4.0
- **Advisor:** Dr. Chris Thomas
- **Coursework:** Multimodal Vision, Comparison of Learning Algorithms

**George Washington University** Aug 2022 – Dec 2023

*MSc in Computer Science*

- **GPA:** 3.76/4.0
- **Advisor:** Dr.Rebecca Hwa & Dr.Samir Rustamov
- **Coursework:** Machine Learning, Neural Networks & Deep Learning, Cloud Computing, Artificial Intelligence, Big Data & Analytics, Database Management Systems, Advanced Software Paradigms, Computer System Architecture, Design & Analysis of Algorithms

**Baku Higher Oil School** Aug 2017 – May 2022

*BEng in Automation Engineering*

- **GPA:** 91/100
- **Advisor:** Dr.Ali Parsayan
- **Coursework:** Calculus I , Calculus II, Calculus III, Numerical Methods, Algorithms and Data Structures I, Algorithms and Data Structures II, Algorithms and Data Structures III, Image Pattern Recognition

## Experience

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**Machine Learning Engineer** Austin, TX

*Polygraf AI*

*Dec 2023 – Aug 2024*

- Achieved a **92% F1** score detecting AI-generated content via fine tuning transformer based language models on AWS SageMaker, Lambda, and GCP, while training **multimodal language models** to detect audio, image, and video deepfakes.

**Machine Learning Engineer** Amsterdam, NL

*Revenue AI*

*Feb 2022 – Aug 2022*

- Improved decision-making processes by deploying machine learning models like **anomaly detection, classification, regression, video summarization** and optimizing data pipelines using Azure services.

**Machine Learning Engineer** Middletown, DE

*Voiceloft*

*Jan 2021 – Feb 2022*

- Achieved **93% ASR** accuracy (**23%** higher than Google Translate) by developing models for low-resource languages using PyTorch, Kaldi, collecting diverse data, and fine-tuning for 11 English accents.

## Publications

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**ENTER: Event Based Interpretable Reasoning for VideoQA,** Oct 2024  
Multimodal Algorithmic Reasoning Workshop, **NeurIPS 2024, Spotlight Paper**

Hammad Ayyubi, Junzhang Liu, Ali Asgarov, Zaber Ibn Abdul Hakim, Najibul Haque Sarker, Zhecan James Wang, Chia-Wei Tang, Hani Alomari, Md. Atabuzzaman, Xudong Lin, Naveen Reddy, Shih-Fu Chang, Chris Thomas

[paper](#) [🔗](#)

**LowCLIP: Adapting the CLIP Model Architecture for Low-Resource** June 2024  
**Languages in Multimodal Image Retrieval Task**

Under Review

Ali Asgarov, Samir Rustamov

[paper](#) [🔗](#)

**3D-CNNs-Based Touchless Human-Machine Interaction** Sep 2023

International Conference on Interactive Collaborative Robotics, **ICR 2023**, Springer, Berlin

Ali Asgarov, Ali Parsayan

[paper](#) [🔗](#)

## Honors & Awards

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**2022** State Program on Education of Azerbaijani Youth Abroad Scholarship

**2022** 1<sup>st</sup> Place (3x), National AI Competition in ML Applications (2020–2022)

**2020** Ranked among the top 15 teams at the III World Robot Olympiad in Győr, Hungary

**2019** Gold Medal at the III World Robot Olympiad in Azerbaijan

**2018 Presidential Scholarship** for Exceptional Academic Performance

**2017** Scored 690 out of 700 on the University Entrance Exam

**2017** High School Graduate with a Gold Medal, placing in the top 0.1% among 90,000 graduating students

## Patents

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**US Patent Application No. 4883-5431-3873 (2024):** System and Method for Identifying and Determining a Content Source.

## Technologies

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**Languages:** Python, C/C++, **SQL (Postgres)**, JavaScript, HTML/CSS, **R**, Matlab, Scala

**Frameworks:** PyTorch, TensorFlow, Keras, **FastAPI**, Flask, **Docker**, MLlib, Apache Spark, Apache Hadoop

**Developer Tools:** Git, TravisCI, **Google Cloud Platform**, **Compute Engine**, **AWS Sagemaker**, **AWS Lambda**, **AWS S3**, **GCP Deep Learning**, GCP BigQuery, GCP AI Platform, Eclipse

**Libraries:** Hugging Face Transformers, Sentence Transformers, OpenCV, Pandas, NumPy, Scikit-learn, NLTK, Spacy, Plotly, Matplotlib, **Gradio**, Streamlit

**Bold** = Expert, Underlined = Intermediate.

## Teaching

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**2024, Fall** CS5644: Machine Learning with Big Data, Virginia Tech

**2025, Spring** CS3114: Data Structures Algorithms, Virginia Tech

## Languages

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**English** (fluent) **Turkish** (fluent) **Azerbaijani** (native)