Erik **Arakelyan**

Machine Learning Researcher

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Education

UCPH (University of Copenhagen)

Copenhagen, Denmark

PhD in Machine Learning — *Sep. 2021 - 2024*

- Working on topics related to explainable AI, NLP and Knowledge Graphs
- PhD Thesis: "Reasoning Inconsistencies and How to Mitigate Them in Deep Learning"
  Supervisors: Isabelle Augenstein and Pasquale Minervini

UCL (University College London)

London, UK

MSc in Machine Learning — *Sep. 2018 - 2019*

- Obtained a Distinction for the completion of the degree as a 1st class honours.
- Masters Thesis: (ICLR 2021 Oral, Outstanding Paper Award): "Complex Query Answering with Neural Link Predictors"
  Supervisor: Pasquale Minervini

AUA (American University of Armenia)

Yerevan, Armenia

B.S. in Computer Science — *Sep 2014 - 2018*

- Got a full scholarship from the Ministry of Education given to top students in the CS department
- Final Project: "Automated Custom Named Entity Recognition and Disambiguation"
  Supervisor: Adam Bittlingmayer

Experience

Senior Researcher

Yerevan, Armenia

Nvidia — *Jan. 2025 - Current*

- Working on LLM reasoning in formalised settings
- Developing optimal LLM inference architectures

Visiting Researcher

Copenhagen, Denmark

Cohere AI — *Aug. 2023 - Jan. 2024*

- Working on Faithful and Symbolic LLM Reasoning
- Published at EMNLP 2025

Visiting Researcher

Bellevue, WA, USA

Amazon — *Aug. 2023 - Jan. 2024*

- Working on Grounded LLM Reasoning and Knowledge Based Completion at Alexa AI. Amazon AGI.
- Creating scalable pipelines for experimentation and inference over KGs
- Researching multi-hop reasoning with retrieval based augmentation over LLMs

ML Integration Lead

Yerevan, Armenia

Aimstack — *Nov. 2021 - Sep. 2022*

- Leading the integration team
- Integrating the Aim tracker into industry standard frameworks:
  Huggingface, PyTorch, PL, Pytorch Ignite, Keras, MonAI, FairSeq, spaCy, Ludwig
- Contributing to the speed and memory optimization of Aim tracker tool
- Researching Efficient Deep Learning methods

Machine Learning Researcher | Tech-Lead

Cambridge, UK

ARM LTD — *Nov. 2020 - Nov. 2021*

- Tech Leading a team in Applied Machine Learning (AML) Team for tailoring DL models
- Implementing ML pipelines as a part of the AML team
- Researching Efficient Deep Learning methods
- Developing Models for various NLP tasks
- Developing Models for image processing

Senior Machine Learning Researcher

Yerevan, Armenia

UNDP Armenia SDG Lab

Oct. 2019 - Oct. 2020

- Implementing innovative solutions for improving public policy decision making
- Created a platform for Real-time analysis and prediction of current touristic activities in Armenia
- Creating Deep Learning models for continuous analysis of Time-series, images and text
- Creating pipelines for continuous Scraping
- Creating optimised flow for Database management an ETL

Teaching Associate

Yerevan, Armenia

American University of Armenia

Sep. 2017 - May 2020

- Teaching Associate of the Data Structure course at AUA
- Teaching Associate of the Deep Learning course at AUA
- Conducting weekly Problem Solving Sessions
- Conducting weekly programming labs
- Conducting Final Project and Bachelor Capstone guidance
- Composing and Grading Homework/Exams

Machine Learning Engineer

Yerevan, Armenia

Teamable LLC

Sep. 2017 - Sep. 2018

- Created an end-to-end pipeline for automated CV parsing and analysis
- Developing Models for various NLP tasks (NER, Semantic parsing, Topic detection etc.)
- Developing Models for image processing
- Developing Flask/Django Apps for integration

Software Engineering Consultant

Yerevan, Armenia

Wolfram Research and Development

Sep. 2016 - Sep. 2017

- Created and end-to-end TTS pipeline
- Developed Software in the Signal Processing Team
- Created builds for different projects
- Optimized structure/flow in different projects

Publications

EMNLP 2025

Arxiv Link

Oral

We introduce Faithful Logic-Aided Reasoning and Exploration (FLARE), a novel interpretable approach for traversing the problem space using task decompositions. We use the LLM to plan a solution, soft-formalise the query into facts and predicates using a logic programming code and simulate that code execution using an exhaustive multi-hop search over the defined space.

EACL 2024

Arxiv Link

Oral, Outstanding Paper Award

"Semantic Sensitivities and Inconsistent Predictions: Measuring the Fragility of NLI Models". We propose a novel framework for assessing semantic sensitivity within transformer-based language models, systematically study the influence of this phenomenon on inconsistent predictions across various transformer variants and show that the effect is persistent and pronounced across both *in-* and *out-of-domain* evaluations.

NeurIPS 2023

Arxiv Link

Oral

CQD$^{\mathcal{A}}$ - "Adapting Neural Link Predictors for Data-Efficient Complex Query Answering". We present a novel method for answering complex queries that include conjunctions, disjunctions and negations within Knowledge Graphs. We use a small adaptation layer on top of neural link predictors to calibrate them for reasoning over complex queries.

ACL 2023

Arxiv Link

Oral

TESTED - "Topic-Guided Sampling For Data-Efficient Multi-Domain Stance Detection". We present a novel, efficient sampling and training method that bolsters state-of-the-art results both in and out of the domain, showing strong generalization across various stance detection benchmarks.

ICLR 2021

Arxiv Link

Oral, Outstanding Paper Award

CQD - "Complex Query Answering with Neural Link Predictors". We propose a framework for efficiently answering complex queries on incomplete Knowledge Graphs. We translate each query into an end-to-end differentiable objective, where the truth value of each atom is computed by a pre-trained neural link predictor.

Teaching

2025	**NLP - Lecturer,** Yerevan Sate University	*Armenia*
2024	**NLP - Lecturer,** University Of Copenhagen	*Denmark*
2024	**Fair and Transparent Machine Learning - Lecturer,** University Of Copenhagen	*Denmark*
2021/2022	**Advanced ML - NLP Lecturer,** Armenian Code Academy	*Armenia*

Skills

Programming	Python, C/C++, Lua, Prolog, Wolfram Mathematica, MATLAB, Algorithm Design, R
Machine Learning	TensorFlow, Keras, PyTorch, NLP, LLM, RAG, Agents, OpenCV, Knowledge Graphs, Math Modeling
Databases	SQL, NoSQL, MongoDB, Scraping, Beautiful Soup, Selenium
Languages	English, Russian, Armenian

Grants & Awards

2023	**Grant Winner,** NEC Laboratories Europe (NEC) Fellowship	*70.000 €*
2024	**Outstanding Paper Award,** EACL 2024, for "Semantic Sensitivities and Inconsistent Predictions"	*Valletta, Malta*
2021	**Outstanding Paper Award,** ICLR 2021, for "Complex Query Answering with Neural Link Predictors"	*Vienna, Austria*
2017	**Winner,** Best Student in The Sphere of IT (Presidential Award)	*Yerevan Armenia*
2017	**Winner,** Fintegration Hackathon organised by Microsoft ans Nasdaq	*Yerevan Armenia*
2016-2017	**Finalist,** ACM ICPC North-Eastern European Regional Contest	*Tbilisi, Georgia*
2016	**Staff Picked Project,** Wolfram Summer School	*Yerevan Armenia*
2016	**Winner,** Best University Project in AUA	*Yerevan Armenia*
2011	**Winner,** Annual competition for woodwind instruments at Romanos Melikyan music school	*Yerevan Armenia*

Presentations

Datafest Yerevan 2025 *Yerevan, Armenia*

PRESENTER *September 2025*

- Compressing LLMs - The Good, the Bad, and the Ugly

Armenian LLM Summer School *Yerevan, Armenia*

HEAD ORGANIZER/LECTURER *July 2024 & 2025*

- Retrieval Augmented Generation and Reasoning with LLMs

YandexHall ML OpenTalk *Yerevan, Armenia*

PRESENTER *December 2024*

- How to Reason Robustly, Verifiably, and Faithfully with LLMs

Presenter Datafest Yerevan 2024 Yerevan, Armenia September 2024

Compressing LLMs - The Good, the Bad, and the Ugly

Fifth Summer School on Mathematics and Applications at YSU *Yerevan, Armenia*

PRESENTER *Aug. 2018*

- Lectured and held workshops on NLP topics

ICLR 2021 *Vienna, Austria*

PRESENTER *2021*

- Presented "Complex Query Answering with Neural Link Predictors", which won the Outstanding Paper Award in ICLR 2021.

Russian Armenian Slavonic University AI LAB *Yerevan, Armenia*

PRESENTER *Sep. 2021*

- Held workshops and hands on programming sessions for Machine Learning students

Armenian Code Academy *Yerevan, Armenia*

ADJUNCT LECTURER *Nov. 2021*

- Taught the NLP section of the Advanced Machine Learning specialization

Extracurricular Activity

Armenian LLM Summer School

Yerevan, Armenia

Head Organizer

July 2024 & 2025

- (2024) Launched the inaugural Armenian LLM Summer School (1–7 Jul 2024, American University of Armenia).
- (2024) Designed a five-module syllabus: pre-training, alignment, vision LLMs, interpretability & safety, and RAG + KGs.
- (2024) Recruited and coordinated 10 international speakers from Meta, MIT, Google, Amazon, USC, UCL, and others.
- (2024) Delivered the hands-on closing module on Retrieval-Augmented Generation with Knowledge Graphs.
- (2024) Secured full funding and GPU credits from Picsart and Nebius AI.
- (2025) Scaled the second edition to 80+ participants (24–30 Jul 2025, AI9 Startup Campus).
- (2025) Expanded curriculum to security, agentic workflows, and multimodality; invited six new expert lecturers.
- (2025) Attracted diversified sponsorship from Armenia Fund, ASOF, Nebius AI, Profound, and AI9.
- (2025) Directed admissions (500+ applications) and managed a camera crew for on-site livestreaming and recording.

DeepLanguageClass

Yerevan, Armenia

NLP team member

Aug. 2017

- Created Models for Armenian Transliteration
- Create pipelines for Armenian Lemmatization and semantic segmentation
- Worked on improving Armenian word embeddings
- Held NLP workshops and sessions

Russian Armenian Slavonic University (RAU) AI LAB

Yerevan, Armenia

Lecturer

Sep. 2019

- Conducted Weekly ML Reading Groups
- Presented Novel Researches and Implementations
- Lectured in Supervised Learning topics