(647) 679-8032
torabian.alireza@gmail.com

# Alireza Torabian

Machine Learning Researcher/Engineer

1997alireza.github.io
1997alireza
alireza-torabian

As a machine learning researcher and software engineer with a strong math background, I have been involved with different projects in various areas including deep learning, computer vision, adversarial machine learning, and natural language processing.

## Experience

**Huawei Technologies** — *Jun. 2023 – Present*
R&D software engineer — *Markham, Canada*
- Optimizing LLVM in the high-performance BiSheng compiler.

**York University** — *Jan. 2021 – Aug. 2023*
Machine learning researcher — *Toronto, Canada*
- Established a structured and formal framework for machine learning calibration.
- Introduced a metric for calibration to achieve a less-biased evaluation.

**Amirkabir University of Technology, NLP Lab** — *Jan. 2020 – Aug. 2020*
NLP researcher *(Github repo)* — *Tehran, Iran*
- Developed a real-time question-answering system based on a knowledge base in Python.
- A sequence-tagging model based on BERT is used for named entity recognition (NER).
- SVM and CNN classification models used to classify questions achieved 96% accuracy and F1-score of 92.7%.

**National University of Singapore, Data Privacy and Trustworthy Machine Learning Research Lab** — *Jul. 2019 – Sep. 2019*
Computer vision researcher *(Github repo)* — *Singapore*
- Developed a plugin that obscures images for increased privacy using adversarial attacks, with a 35% success rate.
- Performed facial recognition attack on FaceNet and face detection attack on SSD MobileNet V1 using PGD.
- Used image augmentations to attack black-box models increased success rate by 1.5x.

**Diaalog** — *Jul. 2018 – Dec. 2018*
Deep learning R&D intern *(Clustering Github repo)*, *(Language model Github repo)* — *Tehran, Iran*
- Developed a Persian chatbot using Python Tensorflow.
- Expanded dataset by clustering questions with LDA and using answers interchangeably.
- LSTM Seq2Seq model with Luong-style attention mechanism is used to generate answers.

**Amirkabir University of Technology, Cognitive Robotics Lab** — *Oct. 2016 – Sep. 2017*
Research assistant — *Tehran, Iran*
- Developed an autonomous exploration algorithm for robots that won 2nd place in RoboCup 2017.
- Object detection task performed to detect victims using YOLO model achieved 99.7% accuracy.

## Education

**York University** — *2021-2023*
M.Sc. in Computer Science, *GPA: A+* — *Toronto, Canada*

**Amirkabir University of Technology (Tehran Polytechnic)** — *2015-2020*
B.Sc. in Computer (Software) Engineering, *GPA: 3.9/4* — *Tehran, Iran*

## Skills

| | |
|---|---|
| Languages | Python, Java, C++, JavaScript |
| Machine learning | TensorFlow, PyTorch, OpenCV, Keras, Numpy, Pandas, Scikit-learn, NLTK, Scipy, JAX |
| Databases | MySQL, PostgreSQL, MongoDB |
| Cloud | AWS |
| Big Data | Spark |
| Other Tools | Git, Unix shell, Jupyter |
| Math | ML Theory, Stats & Prob, Signal Proc., Stochastic Processes, Convex Optimization |

## Other projects

**Alternative Actor and Co-Star Suggestion Using a Graph Autoencoder Model** — *Apr. 2021*
- Applied graph autoencoder to actor network using Keras in Python, achieving 99.46% accuracy in reconstructing the graph. *Github repo*
- An alternative actor is found by searching the latent space using a K-d tree.
- A co-star is suggested according to the predicted weights from the autoencoder model.

**Optimization Problems** — *Jul. 2019*
- Optimized unconstrained and constrained convex problems using line search, trust region, and log barrier. *Github repo*