

Education

Sharif University of Technology

Tehran, Iran

M.SC. IN ARTIFICIAL INTELLIGENCE

2017 - 2019

GPA: **18.84** / 20

Notable Courses

- Machine Learning
- Probabilistic Graphical Models
- Deep Learning
- Stochastic Processes
- Convex Optimization
- Information Theory and Coding
- Natural Language Processing

Amirkabir University of Technology (Tehran Polytechnic)

Tehran, Iran

B.SC. IN SOFTWARE ENGINEERING

2013 - 2017

GPA: **18.92** / 20

Notable Courses

- Foundations of Data Mining
- Artificial Intelligence
- Data Storage & Retrieval

Work Experience

Torob. Co. [website]

Tehran, Iran

DATA SCIENTIST, DATA ENGINEER

Oct. 2020 - now

Torob is the greatest product search engine in Iran and here are some of my tasks:

- Design and implementation of a **product category classifier** given its name. A GPT/LSTM-like model was pretrained on persian product titles and fine-tuned on the target task. Moreover, some monitoring utilities were attached to the service to measure its daily accuracy and detect category shifts. This service auto confirms around 80 percent of the new products category.
- Design and implementation of **query category classifier** with an LSTM model. One of the main differences with the product category classifier was that we trained this model with soft labels. Since users may click on a wide variety of product categories for each query, we created soft labels from user clicks. Moreover, we might need to suggest non-leaf categories. So, some heuristic strategies were taken into account to merge and prune nodes from the category suggestion tree. This service responds in realtime by taking several optimizing and profiling tools including ONNX runtime.
- Design and manage ML pipelines specially designing a model retraining pipeline with GitlabCI on Kubernetes.

Research Projects

Conditional Text Generation with Neural Networks

2019

M.SC. THESIS PROJECT [SCORE: 19.75/20]

Sharif University

UNDER SUPERVISION OF DR. MAHDIEH SOLEYMANI BAGHSHAH

The goal of this project was to generate sentences with desired labels such as sentiment or any other categorical label. To have complete control over the output of the model (with greedy decoding), the "(Single) Latent Based Models" were selected which VAE is one of the most popular ones. To overcome the "KL Collapse" problem or in simple words, the latent ignorance problem of VAE in Language Modeling task, the "Wasserstein Autoencoder" was replaced. At last to learn the latent space of sentences of each label value, a conditional "Masked Autoregressive Flow" network which is a Flow-Based Network was taken into account.

Voice Search Engine on Persian Poems

2017

B.SC. THESIS PROJECT [SCORE: 19/20]

Amirkabir University

UNDER SUPERVISION OF PROF. MOHAMMAD MEHDI HOMAYOUNPOUR

Our main goal in this project was to detect a read poem while a Phoneme to Grapheme model and the text of a wide range of Persian poems were given to me. To this end, I trained a Word to Grapheme model and designed a heuristic search to match the sequence of read graphemes with the sequence of poem graphemes and find some candidates, and at last calculating minimum edit distance to find the nearest poem. This project was implemented in a Client-Server manner. The server was based on Django python framework and the Client was an Android app.

Locating Humanoid Robots in Football Field

2016

RESEARCH AT AUTMAN (AUT-UoFM)

Amirkabir University

Our main problem in AUTMAN was to locate the robot in the field of play based on observations that got from the camera on its head. My primary task was to study the localization methods, especially the Particle Filter method. It was implemented in collaboration with my other teammates.

Other Projects

- 2021 **A fast multithreaded C++ implementation of NLTK BLEU with Python wrapper. An evaluation tool used in our papers.**, [Github link]
- 2019 **Design and implementation of Image2Latex model; Learn to convert an image of a mathematical formula to corresponding latex code.**, Deep Learning Course
- 2018 **MAP and Bayesian Training of a Recommender System**, Probabilistic Graphical Models Course
- 2017 **Design and Implementation of Smart Agents for Pacman Game**, Artificial Intelligence Course
- 2013 **Design and implementation of a 2D Strategic Multiplayer Game with JAVA**, Advanced Programming Course

Teaching Assistance

- 2020 **Deep Learning**, Dr. Mahdieh Soleymani Baghshah *Sharif University*
- 2020 **Engineering Probability and Statistics**, Dr. Naeimeh Omidvar *Sharif University*
- 2019 **Machine Learning**, Dr. Mahdieh Soleymani Baghshah & Prof. Hamid R. Rabiee *Sharif University*
- 2017 **Advanced Programming**, Dr. Seyed Majid Noorhosseini *Amirkabir University*
- 2017 **Design of Algorithms**, Dr. Zahed Rahmati *Amirkabir University*
- 2016 **Operating Systems**, Dr. Nastooh Taheri Javan *Amirkabir University*

Publications

DGSAN: Discrete Generative Self-Adversarial Network

EHSAN MONTAHAEI, DANIAL ALIHOSSEINI, MAHDIEH SOLEYMANI BAGHSHAH
Neurocomputing Journal

2021

[\[link\]](#)

Jointly Measuring Diversity and Quality in Text Generation Models

DANIAL ALIHOSSEINI, EHSAN MONTAHAEI, MAHDIEH SOLEYMANI BAGHSHAH

Proceedings of the Workshop on Methods for Optimizing and Evaluating Neural Language Generation (NAACL - NeuralGen 2019).

2019

[\[link\]](#)

Honors & Awards

- 2020 **Ranked 4th**, based on GPA of M.Sc. Artificial Intelligence students of 2017 entrance at Sharif University of Tech.
- 2018 **Qualified**, as a member of Iran's National Elites Foundation
- 2017 **Direct Admission to M.Sc. Program**, in Artificial Intelligence due to my performance at both Sharif University of Tech. and Amirkabir University of Tech.
- 2017 **Ranked 2nd**, (out of 100) based on GPA of B.Sc. students of 2013 entrance at Amirkabir University of Tech.
- 2016 **Qualified**, as National Scientific Olympiad of Computer Engineering team member
- 2015 **Ranked 3rd**, in Humanoid Teen Size Robot League as a AUTMAN (AUT-Uofm) team member; RoboCup 2015, Hefei, China
- 2013 **Ranked Top 0.1**, in the Country-wide University Entrance Exam

Presentation

The Remote Presentation of "Jointly Measuring Diversity and Quality in Text Generation Models" paper [\[link\]](#)

2019

SPEAKER

Minneapolis, Minnesota, United States

Approximate Methods in Reinforcement Learning

2019

INSTRUCTOR AT WORKSHOP

Institute for Research in Fundamental Sciences (IPM), Tehran, Iran

Skills

MACHINE LEARNING

- Pytorch
- Hugging Face (transformers, tokenizers, datasets)
- Pytorch lightning
- Dask
- Scipy
- Numpy
- Scikit-Learn
- FastAPI

MISCELLANEOUS

- Python
- Elasticsearch
- Django
- Airflow
- Kubernetes
- Git
- Linux

Languages

Persian, Native

English, Intermediate

References

Dr. Mahdiah Soleymani Baghshah

Sharif University

ASSISTANT PROF. OF COMPUTER ENGINEERING DEPARTMENT

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