Amin **Abbasi Shahkoo**

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I graduated from Shahid Beheshti University in artificial intelligence and robotics. I worked on controlling a surgical robot using machine learning and deep reinforcement learning as my Master's thesis at the Machine Learning Lab under the supervision of Dr. Ahmad Ali Abin.
I enjoy analyzing and predicting data and turning any real problem into a problem that can be solved with machine learning methods and AI. Moreover, I am a backend developer who has worked for nearly five years.

Research Interests

Machine Learning

Reinforcement Learning

Evolutionary Algorithms

Data Analysis

Artificial intelligence in healthcare

Autonomous Robotic Surgery

Recommender systems

Data Mining

Education

2018-10 - 2021-12 **M.Sc. in Artificial Intelligence And Robotics**
Shahid Beheshti University - Tehran, Iran
GPA: 17.69/20 (4/4)

2014-10 - 2018-10 **B.Sc. Computer Engineering**
Shiraz University - Shiraz, Iran

Honors and Awards

- Ranked 3rd among all graduate peers in the field of Artificial Intelligence and Robotics at Shahid Beheshti University (Top Student in M.Sc.).
- Ranked 64th among more than 25,000 participants in the Iranian entrance exam for the Master of Science Computer and Information Technology.

M.Sc. Thesis

The surgical robot arm control using deep reinforcement learning and evolutionary algorithms

- supervisor: Dr. Ahmad Ali Abin
- In this project, we are working on the arm of a surgical cutting robot. We present several approaches to the deep reinforcement learning agent that increase the accuracy of the agent during soft tissue cutting surgery.

Publications

1. A Hybrid Deep Reinforcement Learning Model with Evolutionary Algorithm for Autonomous Robotic Surgery

   Amin Abbasi Shahkoo, Ahmad Ali Abin
   IEEE Transactions on Cybernetics
   Submitted: 27-Dec-2021
   Status: under review
   Manuscript ID: CYB-E-2021-12-3454

2. Deep Reinforcement Learning in Continuous Action Space for Autonomous Robotic Surgery

   Amin Abbasi Shahkoo, Ahmad Ali Abin
   International Journal of Computer Assisted Radiology and Surgery
   Submitted: 27-Feb-2022
   Status: under review
   Manuscript ID: CARS-D-22-00209

Work History

2020-06 - Current **Data Scientists (R&D)**

Arnika, Tehran, Iran

- At Arnika we worked in the financial markets forecasting and trading algorithms. In this project, future prices were predicted using machine learning methods such as deep neural network models and market news sentiment analysis. Also, an agent was trained using reinforcement learning that can trade automatically.

2017-11 - 2020-05 **Freelance**

Myself, Tehran, Iran

- web developer - python developer - socket programming - recommender systems

2017-07 - 2017-10 **PHP Developer**

Dideo, Tehran, Iran

- In Dideo we work with Laravel framework and design a web service for playing video REST API

Teaching Experience

Pattern Recognition and Machine Lerning Teacher Assistant

- Shahid Beheshti University
- Spring 2019
- Dr. Ahmad Ali Abin

Data Mining Teacher Assistant

- Shahid Beheshti University
- Fall 2019
- Dr. Alireza Talebpour

Private Tutor

- **course titles:** python programming, java programming, c/c++ programming

Academic Projects

Sentiment analysis on Digikala dataset
A system for analyzing the opinions of online store (digikala) users, using LSTM and BERT. (course: Natural Language Processing)

Control the timing of traffic lights according to intersection traffic
Time series detection using deep recurrent neural networks for better automatic timing of traffic lights intelligently.(course: Neural Networks)

Fraud detection in financial transactions
A fraud detection system in bank financial transactions using HMM algorithm. (course: Machine Learning)

Movie recommendation system
A system that recommended videos to a user according to the records laid down using machine learning techniques. (course: pattern Recognition)

Constraint Clustering
Implement a variety of clustering methods with and without Constraint. (course: Pattern Recognition) [source]

Fuzzy Constraint Clustering
Implementation of this paper. (course: Fuzzy Systems) [source]

Finding the optimal path using genetic algorithms
Implementation of a new crossover mechanism for genetic algorithms with variable-length chromosomes for path optimization problems.
(course: Evolutionary Algorithms) [source]

Newspaper Articles Recognizer
Image recognition of newspaper articles using *yolo* and *opencv* and conversion of each article image into text (OCR) for separation and analysis of news

Computer And Programming Skills

Coding Skills : Python , C , C++ , Java , PHP , JavaScripts , C# , Matlab, R (familiar)

Framework: Laravel, Flask

Scientific and Deep Learning skills: scikit-learn , NumPy , Pandas, Keras, Tensorflow, Pytorch (familiar)

DBMS: MySQL, SQL Server, Redis

Other skills: git, Trello, Linux

References

Dr. Ahmad Ali Abin

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Dr. Hamed Malek

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