Shayan **Khorsandi**

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Research Interests

Software Engineering	Cloud Computing, Distributed Computing, Software Analysis
Artificial Intelligence	Deep Learning, Reinforcement Learning
Human-Computer Interaction	VR/AR, Wearable and Haptic Technologies

Education

March 2020 – Sep 2015 | **B.Sc., Computer Engineering**

Iran University of Science and Technology — GPA : 17.32/20 (3.72/4.0)

- Ranked 3rd among all Iranian universities. [a]
- Supervisor : Prof. Mohammad Reza Jahed-Motlagh.

a. Based on The QS World University Rankings 2020

Industrial Experience

Present – May 2018 | **Software Engineer, Informatics Services Corporation (ISC), Tehran, Iran**

- Development of core services of the **Central Bank of Iran (CBI)**. Member of Central Securities Depository (CSD) and Iranian Instant Payment (IIP) projects.
- Back-End development mainly via **Spring Boot** and **Spring** frameworks. Developed services based on **microservice** and **monolithic** architectures.
- Implemented **microservice patterns** including : Saga Transaction pattern, API Gateway using Zuul, Redis Sentinel for high-availability, and messaging/streaming using Apache Kafka and IBM MQ for the CSD project.
- Developed Socket.IO client based on **Spring Boot** for standard communication between customer banks and the central bank of Iran for the IIP project.
- Dashboard monitoring and management applications development via **Angular** framework. Developed a terminal for real-time communication between angular application and server's command line using WebSocket and Xterm.js for the IIP project.
- Containerized applications using **Docker** and used Jenkins for **CI/CD**.

Research and Teaching Experience

Feb 2020 – June 2016 | **Research Assistant, Bio-Inspired System Design Lab**

Supervisor : Prof. Soroush Sadeghnejad — Amirkabir University of Technology

- Research and Development on **humanoid robots** and Iranian standard-platform robot (KIARASH).
- Design and Implementation a method for predicting rolling ball's trajectory based on **K-NN regression** and **Auto Regression** for Robocup's roll and kick challenge in real and **ROS simulator (Gazebo)** environments.
- Developed Motion Editor application for monitoring **Herkulex** servo motors and motion generation based on pre-defined sequences using **Python**, **PyQt**, and **Arduino**.
- Developed Walk Tuner and Offset Tuner applications for walking calibration based on **PyQt** and **Arduino**.
- Modulation, development, and code migration to the **ROS** platform.

June 2014 – Oct 2013 | **Research Assistant, Robotics Lab**

Supervisor : Prof. Mohsen Bahrami — Amirkabir University of Technology

- Research on **Q-Learning** method for humanoid robots ball catching approach.
- Implementation of stand-up motion for teen-size humanoid robot based on **ROS** platform.

Spring 2019	**Teaching Assistant,** Operating Systems Course	
	Instructor : Prof. Reza Entezari	Iran University of Science and Technology
Spring 2016	**Teaching Assistant,** Advanced Computer Programming Course	
	Instructor : Prof. Adel Rahmani	Iran University of Science and Technology
Fall 2016	**Teaching Assistant,** Foundations of Computer and Programming Course	
	Instructor : Prof. Adel Rahmani	Iran University of Science and Technology

Publications

2019 Y. Mirmohammad, Sh. Khorsandi, M. N. Shahsavari, B. Yazdankhoo, S. Sadeghnejad. **"Ball Path Prediction for Humanoid Robots : Combination of k-NN Regression and Autoregression Methods"**, The International Conference on Robotics and Mechatronics (ICROM), 2019, Tehran, Iran. (PDF)

2017 S. Ramezani, A. Setayeshi, N. Pourmohammadi, A. Arvand, P. Yarahmadi, F. Fallah, Sh. Khorsandi, S. Sadeghnejad. **"AUTMan Humanoid Kid Size Team Description Paper"**. The International Robocup 2017 Humanoid Robot League, Nagoya, Japan. (PDF)

2014 M. Tamiz, E. Bararian, T. A. Shangari, M. Karimi, et al. **"AUT-UofMHumanoid TeenSize Team Description Paper"**. The International Robocup 2014 Humanoid TeenSize Robot League, João Pessoa, Brazil. (PDF)

Honors and Awards

2018 **Technical Committee** Member of Humanoid Robots League, International AUTCup 2018, Tehran, Iran.

2017 **Ranked 3rd** in Humanoid TeenSize Soccer League as a member of AUTMan Team of Amirkabir University of Technology, International Robocup 2017, Nagoya, Japan.

2017 **Ranked 3rd** in Humanoid TeenSize Soccer League Technical Challenge as a member of AUTMan Team of Amirkabir University of Technology, International Robocup 2017, Nagoya, Japan.

2016 **Technical Committee** Member in Humanoid Robots League, International AUTCup 2016, Tehran, Iran.

2016 **Ranked 1st** in Humanoid Robots Olympics League as a member of AUTMan Team of Amirkabir University of Technology, International AUTCup 2016, Tehran, Iran.

2016 **Ranked 2nd** in Humanoid Robots Olympics League Technical Challenge as a member of AUTMan Team of Amirkabir University of Technology, International AUTCup 2016, Tehran, Iran.

2015 **Ranked the top 0.5%** among near 200,000 participants in the "National Universities Entrance Exam" in Mathematics & Physics (2015).

2014 **Ranked 1st** in Humanoid TeenSize Soccer League Technical Challenge as a member of AUT-UofM, Joint Team of Amirkabir University of Technology and University of Manitoba, International Robocup 2014, Joao Pessoa, Brazil.

2013 **Ranked 1st** in Humanoid Soccer League as a member of AUTMan Team of Amirkabir University of Technology, International AUTCup 2013, Tehran, Iran.

2012 **Ranked 2nd** in Urban Robots League as a member of High-Tech Team, International ARAIF 2012, Tehran, Iran.

Skills

Programming Language	**Proficient in :** Java, Python, C/C++, Typescript
	Familiar with : Go, Swift, Dart, Javascript
Machine Learning	Tensorflow, Keras, Scikit-Learn
Framework	Spring Boot (Java), Spring (Java), Django (Python), Beego (Go), Angular
DevOps	Docker, Kubernetes, Jenkins
Tools/Hardware	Apache Kafka, IBM MQ, Redis, Arduino
Robotics	**Software Platform :** ROS
	Robot Platform : NAO, TurtleBot
Operating System	macOS, Linux, Windows

Languages

English	**IELTS Academic : 7.5** (Listening : 7.5, Reading : 9, Writing : 6.5, Speaking : 6.5)
	GRE : Quantitative (168), Analytical Writing (4.0)
Persian (Farsi)	Native

Selected Industrial Projects

Central Securities Depository (CSD) V2
May 2020 - Present

A new version of Central Bank of Iran's CSD system. Implementing back-end services with Spring Boot framework. Designing and implementing a new management and monitoring dashboard with Angular framework. Monolithic architecture is used.

Java | Typescript | Spring Boot | Angular | Apache Kafka | Docker

Iranian Instant Payment (IIP)
August 2019 - Present

IIP is Central Bank of Iran's newest inter-bank payment system. IIP services are available all-around-the clock and should result in the immediate or close to immediate crediting of the Beneficiary's account. Implemented based on the microservice architecture.

Java | Typescript | Spring Boot | Spring Cloud Config | Angular | Xterm.js | Socket.IO | Secure-Shell | Docker

Central Securities Depository (CSD) V1
August 2018 - August 2019

Central Bank of Iran's service for providing inter-bank security market and communication with Tehran Exchange Market. Implemented based on microservice architecture using Spring Boot framework.

Java | Typescript | Spring Boot | Angular | Apache Kafka | IBM MQ | Redis | Docker | Microservices

Selected Academic Projects

2D Puzzle Game with Hand Gesture Recognition
Fall 2019

github.com/abradat/coco-unity

A 2D puzzle game written in Unity. OpenCV framework is used for recognizing user's hand gesture and solving puzzles of the game.

C# | Python | OpenCV | Unity

Ball Trajectory Predictor
Summer 2019 - Fall 2019

github.com/abradat/ball-trajectory-predictor

Implemented the predictor based on the combination of k-NN Regression and Autoregression methods. Data is captured in real and simulator environments based on ROS platform and exported as CSV files.

Python | Numpy | ROS | Gazebo

S&P Stock Index Predictor
Fall 2017

github.com/abradat/stock-prediction Technical Report (Persian)

Implemented the prediction of S&P index by feed forward neural networks based on the Tensorflow framework.

Python | Tensorflow | Numpy

Boxing with Q-Learning
Fall 2017

github.com/abradat/boxing-qlearning

Implemented an agent learns how to box based on Reinforcement Learning. It is implemented in two phases. In the first phase, Naive Q-Learning is used. Then, the Deep-Q Network for improving the performance as the second phase.

Python | Tnesorflow | Q-Learning | Deep Q Network | Reinforcement Learning

∗For a more comprehensive list of my projects please visit my website or Github.

References

Soroush Sadeghnejad
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