Nader **Zare**

FULLSTACK WEB DEVELOPER - C++ AND PYTHON PROGRAMMER - MACHINE LEARNING AND ROBOTIC RESEARCHER

Halifax, Nova Scotia, Canada

 (+1) 9025807574 | nader.zare88@gmail.com | naderzare.github.io | naderzare | nader-zare | Nader Zare

Summary

Senior machine learning researcher and full-stack software developer with 10+ years of experience developing testing and maintaining enterprise software applications implemented in Python, C++, HTML, CSS, and JavaScript. Designing and developing enterprise projects as well as machine learning frameworks to work on the soccer simulation environment. Contributing to the open-source community by making the machine learning projects publicly available. Winning the championship of RoboCup competition as the leader of Cyrus Soccer Simulation 2D team, thanks to Strong programming knowledge in addition to profound machine learning background.

Work Experience

Institute for Big Data Analytics, Dalhousie University   *Halifax, Canada*

FULL-STACK WEB DEVELOPER OF BALLAST WATER REPORTING FORM INFORMATION SYSTEM   *Sep. 2019 - Present*

- Developed back-end and front-end of the website powered by Django and MongoDB.
- Implemented an email crawling module to process received emails, download files, parse PDF forms, standardize data, store standardized data in a database, and respond to emails.
- Implemented port and coordinates standardization algorithm to standardize inputs and create suggestions.
- Created web interfaces to help users in filtering queries.
- Improved the performance of the system in many different algorithms such as calculating Ballast Risk Assessment, Updating Geo Location Fields and Updating port scaled parameters by multiprocessing and running tasks in the background.
- Developed unit tests for features and functions.
- Developing an application programming interface(API) to help users to filter and get stored data in JSON format.

PROJECT MANAGER OF BALLAST WATER REPORTING FORM INFORMATION SYSTEM

- Developed and maintained a sensitive system by constant monitoring of the performance.
- Handled different aspects of the project through the entire software development life cycle.
- Coordinated and assisted team members during the development of the project.
- Managed task assignments to team members and collaborated with them throughout the development of the project.
- Engaged with research collaborators at the Department of Fisheries and Oceans Canada (DFO) and the University of Toronto.
- Introduced agile concept and directed project plans.
- Supported and troubleshot the system in a Ubuntu server.

SENIOR RESEARCH ASSISTANT, ROBOTIC AND MACHINE LEARNING

- Developed a vessel navigation framework for training autonomous vessel navigation.
- Employed deep reinforcement learning methods to train autonomous vessels for navigating in a simulation of real-world environments.
- Developed CYRUS, a 2D soccer simulation team, and employed various novel machine learning methods to solve the multi-agent learning problem.
- Applied machine learning algorithms to the CYRUS soccer simulation 2D team and participated in qualified RoboCup competitions.
- Developed the first Python soccer simulation 2D base code called PYRUS2D, consisting of over 20k lines of code.
- Released the most powerful C++ soccer simulation 2D base code by merging Helios and Gliders base codes and applying the best features of the CYRUS team.
- Developed a soccer simulation 2D log analyzer called Cyrus Log Analyzer that can analyze and generate useful statistical reports from soccer simulation 2D game logs powered by Python.
- Improved and upgraded AutoTest2D software for parallel testing of soccer simulation 2D teams powered by bash scripts.
- Developed AutoTune2D software for fine-tuning soccer simulation 2D team parameters.
- Implemented a simple library called CppDnn for using Keras and TensorFlow for feed forwarding in C++.
- Implemented a Python mathematical library called PyrusGeom for working in two-dimensional geometry fields.
- Simplified Helios base code and its library to help junior students participate in the junior RoboCup competition called StarterAgent2D and StarterLibRCSC.
- Created an application containing bash scripts powered by Docker, a web service powered by Django and SQLite, and a Telegram bot for testing and holding soccer simulation 2D tournaments called SS2D-Docker-Tournament-Runner.
- Implemented a new observation model in soccer simulation 2D server to make the player's observation closer to humans and new robots. The server includes over 50k lines of C++ code.

Peykasa Message ware   *Tehran, Iran*

C++ AND PYTHON DEVELOPER   *Sep 2017 - Mar. 2019*

- Developed and designed a C++ component to manage and monitor SMS messages among GSM network providers.
- Built a high-speed, multi-process Python application to store GSM data on ElasticSearch.
- Redesigned and developed an application with components for parsing, creating flow messages, and storing flows on ElasticSearch.
- Conducted integration tests using the Python Robot Framework for GSM C++ components.
- Worked with many different technologies such as Robotframwork, Kibana, Elasticsearch, and git.

Education

Khajeh Nasir Toosi University of technology *Tehran, Iran*

M.S. in Artificial Intelligent and Robotic *Sep. 2015 - AUG. 2018*

- Thesis: Robust-to-noise Multiagent Decision Making in Stochastic and Dynamic Environment using Reinforcement Learning
- Supervisor: Dr. Amin Nikanjam

SUTECH(Shiraz University of Technology) *Shiraz, Iran*

B.S. in Information Technology Engineering *Sep. 2010 - June. 2014*

- Thesis: Soccer Simulation 2D
- Supervisor: Dr. Seyed Rauf Khayami

Honors & Awards

Leader of CYRUS Soccer Simulation 2D Team

2022	**2nd Place**, RoboCup, Worldwide International Robotic Competition, Soccer Simulation 2D League	*Bangkok, Thailand*
2021	**1st Place**, RoboCup, Worldwide International Robotic Competition, Soccer Simulation 2D League	*Online*
2019	**3rd Place**, RoboCup, Worldwide International Robotic Competition, Soccer Simulation 2D League	*Sydney, Australia*
2018	**2nd Place**, RoboCup, Worldwide International Robotic Competition, Soccer Simulation 2D League	*Montreal, Canada*
2017	**4th Place**, RoboCup, Worldwide International Robotic Competition, Soccer Simulation 2D League	*Nagoya, Japan*
2014	**5th Place**, RoboCup, Worldwide International Robotic Competition, Soccer Simulation 2D League	*Jeoa Pesoa, Brazil*
2020	**2nd Place**, Japan Open RoboCup Competition, Soccer Simulation 2D League	*Japan*
2018	**1st Place**, Asia-Pacific RoboCup Competition, Soccer Simulation 2D League	*Kish, Iran*
2018	**1st Place**, Iran Open RoboCup Competition, Soccer Simulation 2D League	*Tehran, Iran*
2014	**1st Place**, Iran Open RoboCup Competition, Soccer Simulation 2D League	*Tehran, Iran*

High School

2007	**2nd Place**, 5th National Skill Competition in Fars State	*Shiraz, Iran*
2007	**Qualified in the 1st Round**, Iranian Mathematics Olympiad	*Iran*
2007	**Qualified in the 1st Round**, Iranian Physic Olympiad	*Iran*
2006	**Qualified in the 1st Round**, Iranian Mathematics Olympiad	*Iran*
2006	**Qualified in the 1st Round**, Iranian Computer Olympiad	*Iran*

Skills

Programming Languages
Python, C++, CSS, HTML, JavaScript, R

Data Base
MongoDB, Redis, SQLite, ElasticSearch

Integrated development environment (IDE)
PyCharm, CLion, VSCode, QT Creator, R Studio, MATLAB

Artificial Intelligent Concepts
Deep Learning, Deep Reinforcement Learning,

Machine Learning Frameworks
Keras, Tensorflow, Pandas, NumPy,

OS
Ubuntu, Fedora, Windows,

Technologies
Django, Git, GitLAB, Jenkins, Docker, Robot-Framework,

Publications

Cyrus2D base: Source Code Base for RoboCup 2D Soccer Simulation League *2022*

N Zare, O Amini, A Sayareh, M Sarvmaili, A Firouzkouhi, SR Rad, ...

RoboCup 2022: Robot World Cup, Springer

Cyrus 2D Simulation Team Description Paper 2022 *2022*

N Zare, O Amini, A Sayareh, M Sarvmaili, A Firouzkouhi, SR Rad, ...

RoboCup 2022 Symposium and Competitions: Team Description Papers. Bangkok, Thailand.

Improving Dribbling, Passing, and Marking Actions in Soccer Simulation 2D Games Using Machine Learning *2021*

N Zare, O Amini, A Sayareh, M Sarvmaili, A Firouzkouhi, S Matwin, ...

RoboCup 2021: Robot World Cup XXIV, Springer

Engineering Features to Improve Pass Prediction in Soccer Simulation 2D Games *2021*

N Zare, M Sarvmaili, A Sayareh, O Amini, S Matwin, A Soares

RoboCup 2021: Robot World Cup XXIV, Springer

CYRUS Soccer Simulation 2D Team Description Paper 2021 *2021*

N Zare, A Sayareh, M Sarvmaili, O Amini, A Soares, S Matwin.

RoboCup 2021 Symposium and Competitions: Team Description Papers. Online.

Using deep reinforcement learning methods for autonomous vessels in 2d environments *2020*

M Etemad, N Zare, M Sarvmaili, A Soares, B Brandoli Machado, S Matwin.

Canadian Conference on Artificial IntelligenceCanadian AI. Canada.

Cyrus 2D Simulation Team Description Paper 2019 *2019*

N Zare, M Sarvmaili, O Mehrabian, A Nikanjam, SH Khasteh, A Sayareh, ...

RoboCup 2019 Symposium and Competitions: Team Description Papers. Sydney, Australia.

Cyrus 2D Simulation Team Description Paper 2018 *2018*

N Zare, M Sadeghipour, A Keshavarzi, M Sarvmaili, A Nikanjam, ...

RoboCup 2018 Symposium and Competitions: Team Description Papers. Montreal, Canada.

Cyrus 2D Simulation Team Description Paper 2017 *2017*

N Zare A Najimi, M Sarvmaili, ...

RoboCup 2017 Symposium and Competitions: Team Description Papers. Nagoya, Japan

Intelligent and dynamic method to specify chrological order of the games to improve the excitement and fairness of the champions in simulation league *2016*

N Zare, A Keshavarzi, SE Beheshtian, H Mowla, A Akbarpour, H Jafari, ...

Artificial Intelligence and Robotics (IRANOPEN), 2016. Page 1-6, Publisher IEEE. Tehran, Iran.

Using Machine Learning approaches to detect opponent formation *2016*

E Asali, M Valipour, N Zare, A Afshar, MR Katebzadeh, ...

Artificial Intelligence and Robotics (IRANOPEN), 2016. Page 140-144, Publisher IEEE. Tehran, Iran.

Cyrus 2D Simulation Team Description Paper 2016 *2016*

N Zare, A Keshavarzi, SE Beheshtian, H Mowla, A Akbarpour, H Jafari, ...

RoboCup 2016 Symposium and Competitions: Team Description Papers. Leipzig, Germany.

Cyrus 2D Simulation Team Description Paper 2015 *2015*

N Zare, M Karimi, A Keshavarzi, E Asali, HA Poor, A Aminian, ...

RoboCup 2015 Symposium and Competitions: Team Description Papers. Hefei, China.

Cyrus 2D Simulation Team Description Paper 2014 *2014*

R Khayami, N Zare, M Karimi, P Mahor, A Afshar, MS Najafi, M Asadi, ...

RoboCup 2014 Symposium and Competitions: Team Description Papers. Joao Pessoa, Brazil.

Cyrus 2D Simulation Team Description Paper 2013 *2013*

N Zare, H Zolanvar, M karimi, P Mahor, F Tekara, E Asali, M Fatehi.

RoboCup 2013 Symposium and Competitions: Team Description Papers. Eindhoven, Netherlands.

Coordination Approach to Find Best Defense Decision with Multiple Possibilities amoung Robocup Soccer Simulation Team *2013*

A Keshavarzi, N Zare.

Artificial Intelligence and Robotics (IRANOPEN), 2013. Page 1-6, Publisher IEEE. Tehran, Iran.

Program Committees

2022	**Member of Organization Committee**, Soccer Simulation 2D, RoboCup	*Bangkok, Thailand*
2019	**Member of Organization Committee**, Soccer Simulation 2D, RoboCup	*Sydney, Australia*
2018	**Member of Organization Committee**, Soccer Simulation 2D, RoboCup	*Montreal, Canada*
2017	**Member of Technical Committee**, Soccer Simulation 2D, RoboCup	*Nagoya, Japan*
2016	**Member of Technical Committee**, Soccer Simulation 2D, RoboCup	*Hefei, China*
2015	**Member of Technical Committee**, Soccer Simulation 2D, RoboCup	*Leipzig, Germany*
2018	**Member of Organization Committee**, Soccer Simulation 2D, Asia-Pacific RoboCup	*Kish, Iran*
2022	**Member of Executive Committee**, Soccer Simulation 2D, IranOpen Robotic Competition	*Tehran, Iran*
2021	**Member of Executive Committee**, Soccer Simulation 2D, IranOpen Robotic Competition	*Tehran, Iran*
2018	**Member of Technical and Organization Committee**, Soccer Simulation 2D, IranOpen Robotic Competition	*Tehran, Iran*
2017	**Member of Technical and Organization Committee**, Soccer Simulation 2D, IranOpen Robotic Competition	*Tehran, Iran*
2016	**Member of Technical and Organization Committee**, Soccer Simulation 2D, IranOpen Robotic Competition	*Tehran, Iran*
2015	**Member of Technical and Organization Committee**, Soccer Simulation 2D, IranOpen Robotic Competition	*Tehran, Iran*
2017	**General Chair**, Soccer Simulation 2D, ShirazOpen Robotic Competition	*Shiraz, Iran*
2016-2018	**Member of Executive Committee**, Soccer Simulation 2D, ShirazOpen Robotic Competition	*Shiraz, Iran*
2010-2014	**Member of the Information Technology Scientific Student Association**, Shiraz University of Technology	*Shiraz, Iran*
2014	**Vice Chairman of Central Scientific Council Association**, Shiraz University of Technology	*Shiraz, Iran*

TEACHER ASSISTANT

2017	**Evolutionary Computing**, Dr. Amin Nikanjam, K.N. Toosi University	*Tehran, Iran*
2017	**Reinforcement Learning**, Dr. Seyed Hossein Khasteh, K.N. Toosi University	*Tehran, Iran*
2016	**Multi-Agent System**, Dr. Amin Nikanjam, K.N. Toosi University	*Tehran, Iran*
2016	**C++ Programming**, Dr. Amin Nikanjam, K.N. Toosi University	*Tehran, Iran*
2016	**C++ Programming**, Dr. Behrooz Nasihatkon, K.N. Toosi University	*Tehran, Iran*
2013	**Operation System LAB**, Dr. Reza Akbari, Shiraz University of Technology	*Shiraz, Iran*
2013	**C++ Programming**, Dr. Haghighat, Shiraz University of Technology	*Shiraz, Iran*
2013	**Artificial Intelligence**, Dr. Reza Javidan, Shiraz University of Technology	*Shiraz, Iran*
2012	**Operation System LAB**, Dr. Omid Booshehrian, Shiraz University of Technology	*Shiraz, Iran*

Teaching Experiences

2014-2019	**Soccer Simulation 2D**, Soccer Simulation 2D, Helios base code, C++ and Python programming, Ubuntu, Bash script, Artificial Intelligence: Neural Network, Reinforcement Learning, Tensor Flow and Keras	*Atomic Energy High School, Tehran, Iran*
2013-2015	**Soccer Simulation 2D**, Soccer Simulation 2D, Data Structure, Algorithm, Multi-Agent System, Linux Shell Programming, C++ Programming, Artificial Intelligence: Searching Algorithm (A*, Greedy), Dynamic Programming	*Shiraz University of Technology, Shiraz, Iran*
2011-2012	**Computer and Mathematical Olympiad**, Talayeh Daran High School, Marvdash, Iran	*Marvdasht, Iran*

Presentation

2018	**Presenter for Soccer Simulation 2D League and AI**, Atomic Energy High School	*Tehran, Iran*
2018	**Presenter for Soccer Simulation 2D League and AI**, Atomic Energy High School of Mashhad	*Mashhad, Iran*
2016	**Presenter for Learning Algorithms in RoboCup**, K.N. Toosi University	*Tehran, Iran*
2012	**Presenter for Scientific Associations Management, strategic management**, S.U. of Technology	*Shiraz, Iran*
2012	**Presenter for Microsoft Sphere Monitor, human control interaction**, S.U. of Technology	*Shiraz, Iran*
2012	**Technology World, introducing new technologies**, Break time in university, Shiraz University	*Shiraz, Iran*
2011	**Solar Radiation**, Physics Teacher Conference of Fars State	*Shiraz, Iran*

Reference

Prof. Stan Matwin, Dalhousie University, Halifax, Canada., **stan@cs.dal.ca**

Dr. Amilcar Suares, Memorial University of Newfoundland, St. John's, Canada., **amilcarsj@mun.ca**