Erfan Fathi

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Research Interests

Computer Vision | Deep Learning | Reinforcement Learning

Machine Learning | Convolutional Neural Networks | Robotics

Education

2015-Present **Qazvin Islamic Azad University (QIAU),** Qazvin

Bachelor's Degree of Science in Software Engineering.

2011 - 2015 **Hekmat High School,** Tehran

Diploma in Mathematics and Physics.

GPA : 17.62/20

Publications and Reports

2020 **MRL Extended Team Description 2020**

Meisam Kasaeian Naeini, Amin Ganjali Poudeh, Alireza Rashvand, Arghavan Dalvand, Ali Rabbani Doost, Moein Amirian Keivanani, SeyedEmad Razavi, Saeid Esmaeelpourfard, **Erfan Fathi**, etc.

2019 **MRL Team Description Paper for Humanoid TeenSize League of RoboCup 2019**

Hamed Mahmudi, Alireza Fatehi, Amir Gholami, Milad Moradi, **Erfan Fathi**, etc.

2018 **MRL Team Description Paper for Humanoid KidSize League of RoboCup 2018**

Meisam Teimouri1, Alireza Fatehi, Hamed Mahmoudi, Parham Sagharchi Ha, Amir Gholami, Mohammad Hossein Delavaran,Fateme Movafegh,Golnoush Rahmani, **Erfan Fathi**.

Professional Experiences

2019-Present **Artificial Intelligence Team,** MRL SSL Lab. QIAU

The MRL SSL Lab focuses on the problem of intelligent multi-agent cooperation and control in a highly dynamic environment with a hybrid centralized/distributed system on small size robots.

2018 - 2019 **Software Supervisor,** MRL HSL Lab. QIAU

2017 **Software Developer,** Orbi Co. Qazvin

Orbi is a startup to build a control robot for gaming and learning programming languages.

2016 - 2018 **Computer Vision Team,** MRL HSL Lab. QIAU

In the MRL HSL or humanoid soccer league Lab, human-like fully autonomous robots play soccer against each other and meanwhile handle sta-ble walking, visual perception of the ball, players, and the field, modeling and kicking the ball, and also self-localization.

Selected Projects

2019 **Learning go to ball skill for small size robots,** MRL SSL Lab, QIAU.

Go-to-ball is a skill where the robot learns to navigate to the ball and get the ball on it's dribbler.In this project we learn an agent in continuous action space with deep deterministic policy gradient (DDPG) Algorithm.

2018 **Goal Posts Detection in Humanoid Soccer Field,** MRL HSL Lab, QIAU.

This was a project for detecting goal posts in a soccer field. This project is implemented by machine Learning approaches.We use the HAAR feature of goalposts and learn it with an Adaboost classifier.

2017 **Obstacle Avoidance Implement On Humanoid Robot,** MRL HSL Lab, QIAU.

Obstacle Avoidance implemented on humanoid soccer robots. In this project, we detect objects in the soccer field with image processing and we pass them through path planning algorithms (A*).

2017 **Camera Calibration using PSO Algorithm,** MRL HSL Lab, QIAU.

To make an accurate world model a robot needs to estimate distance of the objects relative to an egocentric coordinate system. We use kinematics and robot motors to get the robot distance to our objects. To get the exact distance, the motors must be calibrated. The robot then detects a chessboard using the camera and calibrates the motors with pso algorithm.

2016 **Recognize Boundary of Soccer Field,** MRL HSL Lab, QIAU.

The robot should not leave the playing field. For this reason, it must recognize the end of the soccer field. We used a convex hull algorithm for this project.

Honors and Awards

2018 **1st place of RoboCup Asia Pacific,** Kish Iran.

2018 **Participant in Deep Learning Summer School,** University of Tehran, Iran.

2018 **1st place of RoboCup World Competition,** Montreal Canada.

2018 **1st place of RoboCup Iran Open,** Tehran Iran.

2017 **Participant in Deep Learning Summer School,** University of Tehran, Iran.

2017 **1st place in the Technical Challenge of RoboCup World Competition**, Nagoya Japan.

2017 **1st place of RoboCup Asia Pacific**, Bangkok Thailand.

2017 **2nd place of RoboCup Iran Open,** Tehran Iran.

2016 - 2020 **Awarded for Research Scholarship.** QIAU.

Talks and Presentations

2019 **Introduction To Deep Learning With Pytorch,** MRL SSL Lab, QIAU.

2018 **A Review On Metaheuristic Algorithms,** QIAU.

Skills

Languages	Persian (Native), English(Fluent)
Social Skills	Strong teamwork, quick learner and highly self-motivated, Executive Planning
Methodologies	Computer Vision, Machine Learning, Neural Networks, Reinforcement Learning
Programming Languages	C/C++, Python, C#, Lua
Familiar with	Java, Shell Script, SQL , JavaScript, Go
Misc	PyTorch, TensorFlow, OpenCV, Torchvision, V4L2, Make, Git, Linux, Matplotlib, Sklearn, Numpy, Pandas