

Aref Moqadam Mehr

Research Interests

Machine Learning approaches for Computer Vision and Image Processing such as Convolutional Neural Networks
Image Understanding and Scene Recognition
3D Image Interpretation from Single Image through Machine Learning Methods
3D Image Reconstruction through Photogrammetry Methods
Robotic and Artificial Intelligent

Education

- 2011–2016 **Qazvin Azad University (QIAU)**, *Bachelor's Degree of Science in Software Engineering, Ranked 6 in the entrance exam..*
Thesis: Soccer Field Object Detection using Convolutional Neural Network
- 2004–2011 **National Organization for Development of Exceptional Talents (NODET)**, *High School - Diploma in Mathematics and Physics Discipline, Admitted over thousands of applicants. GPA: 16.60/20.*

Working Experiences

- 2015–2016 **Team Leader**, NAO BIPED LAB., QIAU.
Management a team of 15 members, working on Aldebaran NAO robots in order to play soccer against other teams in RoboCup Standard Platform League Competition.
- 2015–2016 **Chief Technology Officer**, NEGAR AFARIN BARAJIN (NAB), Tehran.
NAB was an automatic engine to create 3D models from sets of images or videos taken from an object in any dimension using photogrammetry techniques. management a team of 5 members for development and maintenance of the To3D.net engine and website was my responsibility.
- 2013–2015 **Development Team Member**, Q-GRID LAB., QIAU.
Implementation of a grid computing system, based on BOINC platform, on about 100 office computers to recycle the dead time.
- Since 2011 **Computer Vision Team**, NAO BIPED LAB., QIAU.
Design and Implementation of NAO humanoid robot vision system in order to detect and recognize objects in a standard soccer field.

Selected Projects

- 2016 **Shifting Organizational Culture and a Democratic Adaptation of Agile Software Engineering Paradigms for Research**, MECHATRONICS RESEARCH LABORATORIES, QIAU.
Adapting a combination of SCRUM and XP software development processes and team management systems for Research Labs and implementing it in Nao Biped Lab. which later followed by other MRL Labs. Designing a human resource management and recruiting framework for Nao Biped Lab.
- 2015 **Soccer Field Object Recognition**, NAO BIPED LABORATORY, QIAU.
Implementation of a module to detect every object in a soccer field such as goal posts, field lines, robots, and ball by using machine learning methods for a VGA camera in real-time applications in tight computation constraints. Utilizing a Convolutional Neural Network to recognize objects in a dynamic environment, independent from lighting.
- 2015 **Green SRC**, SRC.SYSTEMS, QIAU.
This project makes buildings more intelligent so that they can interact more with the individuals and be more energy efficient. The system learns the human reactions, preferences and behavior and tries to manipulate environment parameters according to these information.
- 2014 **Overt Visual Attention Control in Soccer**, NAO BIPED LABORATORY, QIAU.
A Module to calculate the best direction to look/go using the previous observations based on grid-base optimization methods.
- 2013 **Environment Modeling in a Soccer Game**, NAO BIPED LABORATORY, QIAU.
Estimation, filtering, positions tracking and prediction of detected objects. Model the environments by Bayesian approaches such as particle filter. Track robot self-location using Mont Carlo Particle Filter.
- 2012 **Semi-Automatic Sensor Calibration**, NAO BIPED LABORATORY, QIAU.
Calibration of robot cameras and gyro sensor displacement using Gauss-Newton optimization method. Correction results in determining object's position.

Honors and Awards

- Since 2011 Awarded for Research Scholarship from QIAU
- Since 2015 Technical and Organization Committee Member of RoboCup Iran Open
- 2014 Make it up to Quarter Final in World RoboCup Championship
- 2014 3rd place of RoboCup German Open
- 2012'13'14 1st place of RoboCup Iran Open
- 2012'14 Recipient of Iran Open Innovation Award

Publications and Reports

- in preparation **Overt Visual Attention Control for Humanoid Robots**
- in preparation **Automatic Simultaneous Calibration of Joints and Camera for Humanoid Robots**
- 2016 **Mehr, A.M., et.al., MRL-SPL. Team Description for RoboCup 2016.**
- 2015 **AmirGhiasvand, O., Shahroudi, N., Sharpasand, M.A., Mehr, A.M., et.al., Team Description for RoboCup 2015.**

- 2013 **Mehr, A.M.** and Shahroudi, N., 2013, April. **A debugger tool for vision on humanoid framework.** In AI & Robotics and 5th RoboCup Iran Open International Symposium (RIOS), 2013 3rd Joint Conference of (pp. 1-5). IEEE.
- 2013 Lashgarian, M., Mohammad Shafiei, R.N., Harandi, M.A.Z., **Mehr, A.M.**, et.al., **MRL-SPL Team Description 2013 Standard Platform League.**
- 2012 Hashemi, E., Jadidi, M.G., Yaghobi, M., Lashgarian, M., Shafiei, M., Shahmohammadi, M.R., Zarei, K., Shahroudi, N., **Mehr, A.M.** et.al., **Team Report and Code Release 2012.**

Talks

- 2015 An Efficient Graph-Based Image Segmentation - QIAU
- 2014 Scrum Software Engineering - QIAU
- 2014 Active Vision and Head motion - Iran Open Innovation Challenge
- 2014 Object Oriented Analysis and Design - QIAU
- 2013 A Debugger Tool for Vision on Humanoid Framework - Iran Open Symposium

Skills

- Languages Persian (Native), English(Very Fluent), German(Intermediate), Turkish(Intermediate), Spanish (Beginner)
- Social Skills Leadership, Executive Planning, Working with different personalities, Interviewing and recruitment.
- Methodologies Machine Learning (SVM, NN, ConvNet, Gradient Descent), Computer Vision, Photogrammetry Basics, Probabilistic Robotics (Particle Filter, Bayesian Filters, Swarm Optimization)
- Programming Languages C/C++ (expert), MATLAB (expert), Python, PHP, C#, Shell Script, MySQL,
- Misc Linux (expert), ROS, TensorFlow Library, TFLearn, OpenCV, OpenGL, OpenMVG, V4L2, git, Subversion, GDB, OpenMP, OpenCL, Qt SDK, Qt Creator, Eclipse, Visual Studio, Vim, .Net, Android SDK, BOINC

References

Upon Request.