

Mohammadreza Mousaei

ROBOTICS RESEARCHER · CARNEGIE MELLON UNIVERSITY

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Research Experience

Carnegie Mellon University

RESEARCH ASSOCIATE AT FIELD ROBOTICS CENTER

Pittsburgh, PA

Nov. 2017 - present

- **Developing Planning Software for multi-agent air/ground robots for DARPA Subterranean Challenge:**

Adviser: Dr. Sebastian Scherer

- Developing simulation environment in gazebo and implementing Global and Local Trajectory Planner in ROS.

- **Successfully deployed first of its kind, autonomous inspection system for decommissioning uranium enrichment facilities**

Adviser: Prof. William (Red) Whittaker

- Leading Autonomy team for state estimation, 3D Perception and state machine.
- Control/ROS developer for attitude and position control.

- **Developing Software/Hardware for Moon Rover Robot**

Adviser: Prof. William (Red) Whittaker

- Developing Software/Hardware of a custom designed light weighted LiDar to construct a 3D point cloud of environment

University of Illinois at Chicago

RESEARCH ASSISTANT AT NICEST LAB

Chicago, IL

Aug. 2015 - Nov 2017

- **Designing a fully integrated radar and communication system**

Adviser: Dr. Besma Smida

- Proposing, Formulating and Designing the integrated radar and communication system using pilot symbols

- **Optimizing Pilot Overhead for Ultra-Reliable Short-Packet Transmission**

Adviser: Dr. Besma Smida

- Formulating and Optimizing wireless communication systems for short packet communication.

Sharif University Of Technology

RESEARCH ASSISTANT AT COMPUTER VISION LAB

Tehran, Iran

Nov. 2014 - Feb. 2015

- **Designing and Implementing an autonomous home assistant robot for participating in AUT-CUP competitions**

Adviser: Dr. Mansour Jamzad

- Design and Implementation of an at-Home robot (Electromechanical Platform, Motion planning, Control)

Tehran Polytechnic University

RESEARCH ASSISTANT AT COMPUTER VISION LAB

Tehran, Iran

Jan. 2015 - Jul. 2015

- **Developing an autonomous home assistant Robot for ROBOCUP 2015 (Joao Pessoa, Brazil)**

Adviser: Dr. Saeed Shiry

- ROS/OpenCV developer for object detection

Skills

Programming	C/C++, C#, Python, MATLAB, JAVA, VHDL, Verilog, LaTeX
Robotic Programming Tools	ROS (Robot Operating System), OpenCV, PCL, OMPL, Gazebo
Smart Phone Programming	iOS (Swift), Android (JAVA)
Web	HTML, CSS, JS, php
Microcontrollers	AVR, ARM, FPGA, PLC
PCB Layout	Altium Designer
Languages	Persian (native), English (fluent), Arabic(Intermediate)

Education

University of Illinois at Chicago

M.Sc. IN ELECTRICAL AND COMPUTER ENGINEERING

Chicago, IL

Aug. 2015 - PRESENT

Shahid Beheshti University (former National University of Iran)

B.S. IN ELECTRICAL AND COMPUTER ENGINEERING

Tehran, Iran

Sep. 2010 - Jan 2015

Publications

- **M. Mousaei**, S. Vahidian, B. Smida, "Training Signal Optimization for Communication in Finite-Blocklength: An Analytical Approach", **IEEE Communications Letters**, *Under Preparation*.
- **M. Mousaei**, M. Soltanalian, B. Smida, "ComSens: Exploiting Pilot Diversity for Pervasive Integration of Communication and Sensing", **IEEE Military Conference on Communication**, Oct 2017.
- **M. Mousaei**, B. Smida, "Optimizing Pilot Overhead for Ultra-Reliable Short-Packet Transmission", *IEEE International Conference on Communication*, May 2017.
- A. Sheikhsafari, S. Gharghabi, K. Sartipi, **M. Mousaei**, A. Sheikhsafari, E. Babaian and S. Shiry Ghidary, "Amirkabir University of Technology (AUT) @Home 2014 Team Description Paper", **Robocup 2014, Joao Pessoa, Brazil**, Jul. 2014.
- **M. Mousaei**, A. Keipour, E. Babaian, "Automated High-Speed Traffic Monitoring and Violation Detection Using RFID Technology", **IEEE Iranian Conference on Electrical Engineering**, May 2014.
- A. Keipour, K. Sartipi, **M. Mousaei**, S. Mohammadzadeh, M. Jamzad, "Team Description Paper for Sharif University of Technology (SUT) Team", **AUTCUP Robotics competitions**, Oct. 2013.

Honors & Awards

2014	2nd Place , AUT-CUP Robotic International Competition, Artificial Intelligence league	<i>Amirkabir U. of Tech</i>
2012	2nd Place , ACM ICPC Qualification Programming Contest	<i>S. Beheshti Univ.</i>
2012	19th Place , ACM ICPC West Asia Regional Programming Contest	<i>Sharif U. of Tech</i>
2011	5th Place , ACM ICPC Qualification Programming Contest	<i>S. Beheshti Univ.</i>
2010	Ranked Top 1% , Mathematics and Physics among more than 178,000 students in Iranian nationwide university entrance examination (Konkoor).	<i>Tehran, Iran</i>
2008	Accepted , Iranian National Olympiad Competition in Mathematics	<i>Tehran, Iran</i>
2007	Accepted , Iranian National Olympiad Competition in Computer Science	<i>Tehran, Iran</i>

Work Experience

PLTW Illinois

IT EXPERT

Chicago, IL

Jun. 2016 - Sep. 2016

- Debug and Troubleshoot Network technical problems
 - Finding and tuning bottleneck of the network (NIC, Soft interrupt, Kernel buffer, Network layer, etc)

Hooshmand Afzar CO (Pish Robot)

DIGITAL DESIGNER

Tehran, Iran

Jan. 2012 - Jun. 2012

- Designing and Implementing a differential drive mobile robot
 - Designing Control System (PID Hybrid Control system with Go-to-Goal and Obstacle-Avoidance states) and implementing with ROS on Raspberry Pi platform

Rahjuyan Sanat Taban CO (RST)

DIGITAL DESIGNER

Tehran, Iran

Jun. 2012 - Dec. 2012

- Design and Implementing digitally controlled current source
 - Analog/Digital Design of a closed loop digital control system using PID controller and Implementing the designed using C++ on ARM Cortex-M3 (LPC1768) Microcontroller.

Test Scores

TOEFL

SCORE: 105

ETS

Dec. 2014

- Reading (29/30), Listening (29/30), Speaking (22/30), Writing (25/30)

GRE

SCORE: 313

ETS

Nov. 2014

- Analytical (3.5/6.0), Quantitative (167/170), Verbal (146/170)