Mehdi Mehdikhani

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Research Interests

- Robotics, Autonomous Vehicles, Embedded Systems, Automation and Control, Computer Vision, Machine Learning, Artificial Intelligence, Human-Robot Interaction

Education

- **Polytechnic University of Milan** — **Milan, Italy**
  MSc - Computer Science and Engineering, Robotics Track — *2019–2021*
- **Isfahan University of Technology (IUT)** — **Isfahan, Iran**
  BSc - Computer Software Engineering , GPA: 3.81/4.00 — *2012–2017*

Research Experience

- **Research Assistance** — **Isfahan, Iran**
  Advanced Robotics and Mechatronics Laboratory, ARMLab, IUT — *2015–2017*
  - Design and implementation of hardware and software for new robotic platforms.
  - Modification and maintenance of the available platforms.
  - Implementation and assessment of various SLAM and Navigation algorithms.
  - Help other students in their research and thesis.
  - Manage a rescue robot team, consist of nine people to create an autonomous rescue robot.

Work Experience

- **Automation Engineer** — **Isfahan, Iran**
  Organon Sanaat Sepahan Co. — *2017–2018*
  - PLC Programming and HMI Design in two industrial project
  - Implementing various algorithms on STM32 discovery kit and AVR Microcontrollers.
- **Robotics Engineer** — **Isfahan, Iran**
  Dynamic and Robotics Center, Department of Mechanical Engineering, IUT — *2013–2014*
  - Design and construction of a new hardware interface for a Stewart robot platform.
  - Help other students in implementing their codes on robots.
  - Implementation and test of various control algorithms.

Internship

- **Robotics and Automation** — **Isfahan, Iran**
  Organon Sanaat Sepahan Co. — *2016*
  PLC Programming and HMI design for pipeline pressure control and automatic scheduling of working hours in a water pumping station.

Patent

- **Expandable data acquisition and motor control device** **Iran**
  2016

  The device is an interface between a controller (PC, Microcontroller, PLC, . . .) and various types of rotary encoders, motor drivers and conventional sensors. The most important feature of this device is the ability to connect to more peripherals by adding extension boards to it. Registration Number: 92172

Publication

- **A Model-Free Approach to General Video Game Playing** **KBEI, Iran**
  4th IEEE International Conference on Knowledge-Based Engineering and Innovation *2017*
  In this paper, we tried to eliminate two significant problems in general video game playing, the assumption of availability of an exact model of the world and performing a search in an online way. We introduced an offline method for learning the model of the world.

Notable Projects

- **Bachelor Thesis:** *'Mapping and Navigation'*

  Theoretical study and practical implementation of Simultaneous Localization and Mapping (SLAM) and map-based indoor navigation

- **Industrial Project with Department of Mechanical Engineering:** *'High-precision polishing tool'*

  The device can connect to a milling machine and control the force applied by its end effector. I redesigned and constructed the embedded system and control software of the device, and also I introduced an innovative approach to measure force feedback by creating a new force sensor

- **Research Project in ARMLab:** *'DC Motor torque and speed control board'*

  This device is able to control the speed and the torque of a DC motor. Furthermore, with the help of an encoder, we can calculate the speed and theta of the motor and reach a desired position or speed.

- **Embedded System Design Course Project:** *'Simple Thermal Camera'*

  In this project, I designed and constructed a simple thermal camera by TPA81 infra-red thermal sensor. TPA81 is a thermopile array detecting infra-red in the 2um-22um range. It has an array of eight thermopiles arranged in a row so that it can measure the temperature of 8 adjacent points simultaneously. Through attaching this sensor to the top of a servo motor, we can create a thermal image and have a simple thermal camera.

HONORS AND AWARDS

- **Full Scholarship - ROSCon:** *Awarded a full scholarship by Open Source Robotics Foundation to participate in the ROSCon held in Vancouver, Canada, 2017*
- **Ranked 3th (top 4%) - Computer Engineering Undergraduate class:** *Among 73 electrical and computer engineering undergraduates in Isfahan University of Technology, 2012–2017*
- **Merit-based Admission Offer:** *M.Sc. program, at Isfahan University of Technology and Amirkabir University of Technology without participating in the Nationwide University Entrance Exam. Iran. (Declined - 2017)*

- **Ranked 1st in the Kharazmi young competition:** *The highest ranked scientific competition in Iran hold by top Iranian scientific organizations including "Science and Research Ministry, Education Ministry, Industrial Research Organization, Nation Organization for Development of Exceptional Talents), Robotic branch – 2011.*

Technical and Personal skills

- **Programming Languages:** C, C++, Python, SQL, Lisp, AIML
- **Frameworks & Libraries:** ROS, OpenCV, MoveIt, Boost, Qt
- **Hardware:** AVR, ARM, Arduino, Raspberry Pi, Digital Logic ICs, Various Sensors and Modules
- **CAD:** Altium Designer, LibreCAD, Proteus, Blender
- **Simulators:** Gazebo, V-rep
- **Other:** Git, CUDA, MATLAB and Simulink, LaTeX, Microsoft Office, Microsoft SQL Server, Microsoft Project, Agile Scrum
- **General Business Skills:** Good presentation skills, Works well in a team.

Language Skills

- **English:** Full Professional Proficiency
- **Persian:** Native
- **Azerbaijani:** Native (Bilingual Proficiency)
- **Turkish:** Minimum Professional Proficiency

Extra-curricular activity

- Member of Computer&IT engineering Student Scientific Association at the Department of Electrical and Computer Engineering for two consecutive years: 2014 and 2015.
- Free Discussion Moderator, Held and moderated Azerbaijani free discussion sessions for about one year at Isfahan University of Technology, 2013.

Hobbies

- Travelling, Swimming, Hiking, Public Speaking, Music

References

- Available upon request