Sadra Naddaf Shargh

Graduate Student · Computer Engineer

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Education

Lamar University (LU) — *Beaumont, TX*

Doctorate in Electrical Engineering — *Aug. 2019 - Present*

Master of Computer Science — *Aug. 2020 - present*

- GPA : 4.0/4.0

Ferdowsi University of Mashhad (FUM) — *Mashhad, Iran*

B.Sc. in Computer Engineering — *Sep. 2013 - Sep. 2018*

- Thesis Title : Multiple Magnet Localization with Medical Applications

Skills

Programming	C/C++, Matlab, Node.js., Python **Familiar:** HTML, Node add-ons, Linux Shell Programming, device tree (DTS).
Embedded Sys.	ARM ST controller(STM32Cube, eclipse), **Experienced:** Linux-Based Embedded Sys. (e.g., NVIDIA Jetson, raspberry pi, Odroid). **Familiar:** AVR and ARM LPC series, Arduino, TI MSP microcontrollers (code composer, MSP432E4 series)
Circuit Design	Altium Desinger, Proteus(simulation).
Robotics	ROS(Robot Operating System), robotics principles, sensors, modules, MoCap.
Database	NoSQL (MongoDB) , relational Database under course (database principals). **Familiar:** Spark.
Machine Vision	**Experienced:** Matlab, OpenCV, Intel RealSense Cameras. **Familiar:** Tensorflow, Keras.
Other	Microsoft Office, TEX, Visual studio, Eclipse, VScode, git, Docker, Linux OS command line.

Experience

SLAM-Based 3D reconstruction on mobile robot for Inspection purposes — *Beaumont, TX*

Research Assistant, RICS LAB — *Oct. 2019 - Present*

- Experienced with ROS, MIT racecar platform, Intel Realsense Cameras, NVIDIA Jetson Boards.
- 3D reconstruction of areas with sparse features.
- Fusing different Odometry sources.
- Experienced different ROS tools e.g., RTABMAP, RVIZ, TF.

Swarm Robotics with Motion Capture(MoCap) Analysis using Crazyflie Drones. — *Beaumont, TX*

Research Assistant, RICS LAB — *Oct. 2019 - Apr. 2020*

- Experienced with ROS and Crazyflie Drones, for implementation of swarm algorithms.
- Coded an Interface for linking MoCap to ROS.
- Coded an Interface for linking Matlab-Coded swarm Robotics alogorithm to ROS.

Coral Detection and classification by Image Segmentation — *Beaumont, TX*

Freelance — *March. 2020 - May. 2020*

- pre-process images using PIL and OpenCV and anotated.
- segmented images of 8 different categories of corals with the accuracy of mIoU 60.1 %.

FUM Bionic Hand-III R&D Project — *Mashhad, Iran*

Research Assistant, FUM Advanced Robotics LAB — *Mar. 2016 - May. 2019*

- Performed Simulation, Machine Learning(NN), Optimization(GA, LM, Fmincon,), Electronic board design and soldering, ARM micro-controller Programming and module, Report Writing, and team managing.
- The 'Fum Bionic Hand-III is a project to develop a bionic hand that aims to rehabilitate disabled people. The exclusive characteristic of this device is the reproduction of body's muscle muscle movement by detecting movements through magnet's movements, which is implanted inside the body. My thesis was based on localizing and tracking magnets to mimic actual body muscle movements.

FUM Lawn Mower Project — *Mashhad, Iran*

Research Assistant, FUM Advanced Robotics LAB — *June. 2016 - Jul. 2018*

- Developed Obstacle detection System(ultrasonic), a Wireless Programmer for programming STM32, and Ethernet Module initializing over STM32.
- Researched for Real-time Human Detection on Embedded Systems for lawn Mover robot. (HOG detector)
- This Project was aimed to design an automated lawnmower to cut grass in urban areas.

CRM Web-Application (Ordered by Khorasan Newspaper)

Mashhad, Iran

Node.JS Back-end Developer — *Sep. 2017 - Jun. 2018*

- Designed back-end and back-end programming of a CRM (customer relationship management) web application due to order Of Khorasan Newspaper.
- Developed using MongoDB and Node.js, REST API (front-end is Angular 4)

Pasokhplus Software Development Team

Tehran & Mashhad, Iran

Back-end Developer, Computer Vision Developer — *Sep. 2016 - Feb. 2019*

- Pasokhplus is a mobile software started by Ferdowsi University Students, which aims to Speed up the process of grading multiple-choice Tests. This software can grade a multiple Choice test Answer sheet in less than 300ms with Image processing (depend on the System). See Pasokhplus.ir (in Persian)
- Developed C++, OpenCV, and Node.js Add-on library partly for a server's back-end. Ordered by Rose Computer System Inc(AWS EC2 & docker).
- Developed and Synchronized a part of the library to be compatible with Cordova plug-ins for IOS.

IP-phone Project

Mashhad, Iran

embedded Linux OS developer — *Sep. 2017 - Dec. 2017*

- initializing peripherals with device tree(DTS)(specifically WM8960 sound codec) On LEDE and OpenWRT embedded Linux OS.
- A project aimed to design a phone based on IP.

Robotics Association

Mashhad, Iran

Embedded Designer and Developer — *Aug. 2015 - Apr. 2016*

- Developed RFID gesture detection For FUM Bionic Hand-I.
- Experienced in designing and Implementing Detecting and Authenticating System Based on RFID.
- Designed and Implemented IoT devices with Application inBuilding Management Systems. (RFID-Wireless modules(ESP12)-Touch Sensors)

Honors & Awards

2018	**3rd Place,** RoboCup IranOpen International Competitions - Fum-BionicHand in senior Demo League	*Tehran, Iran*
2016	**Cultural Superior booth,** 19th Int. Exhibition of Computer IRANCOM and 6th Exhibition of SMART CITY	*Mashhad, Iran*
2013	**TOP 3%,** national Iranian Universities entrance exam, very competitive with nearly 330,000 participants.	*Iran*

Teaching Experiences

2017	**Introduction to Computer Engineering Course,** Assistant	*Mashhad, Iran*
2017	**Artificial Intelligence Course,** Assistant Team Member	*Mashhad, Iran*
2017	**Robotics principles Course,** Assistant	*Mashhad, Iran*
2016	**STM32 ARM microcontroller Programming Courses(two courses),** Assistant	*Mashhad, Iran*

Publications

DESIGN AND IMPLEMENTATION OF A MULTIPLE PERMANENT MAGNET TRACKING SYSTEM — *2020*

Sadra Naddaf Shargh, Amirmohammad Naddaf Shargh, Mojtaba Izadi, Alireza Akbarzadeh — *To be Submitted*

Next-Generation of Weld Quality Assessment Using Deep Learning and Digital Radiographic Images — *2020*

M-Mahdi Naddaf-Sh, Sadra Naddaf-Sh, Hassan Zargaradeh, Mohammad R. Zahiri, Amir R.Kashani — *AAAI Spring Symposium*

Robust Real-time Magnetic-based Object Localization to Sensor's Fault using RNN — *2019*

S. Naseri-G, H. Rafei, M. Akbarzadeh, A. Akbarzadeh, A. Naddaf and S. Naddaf shargh — *9th ICCKE*

Simplifying user interaction solutions for the FUM Bionic Hand-I — *2016*

S. Bahrami M., Hamed Jafarzadeh, Sadra Naddaf, Sina Darvishi, Seyyed Alireza Esfahani, Pouya Pishbin, Farsad Babazadeh, Aryan Makhdoumi, Alireza Akbarzadeh, and Ahmad Hajipour — *4th Int. Conf. on Robotics and Mechatronics (ICROM)*

Detecting gripping type using FUM Bionic Hand by RFID — *2016*

S. Bahrami, Hamed Jafarzadeh, Sadra Naddaf, Alireza Akbarzadeh, and Ahmad Hajipour — *Int. Conf. on Electrical Engineering (EE2016)*