

Sadra Naddaf

GRADUATE STUDENT · COMPUTER ENGINEER

Beaumont, TX, U.S.A.

☎ (+1) 409-499-1613 | ✉ naddafsadra@gmail.com | snaddafsharg@lamar.edu | 🏠 sadra.dev | 📷 sadransh |
📄 sadra-naddaf | 🌐 sadra-naddaf

Education

Lamar University (LU)

DOCTORATE IN ELECTRICAL ENGINEERING

MASTER OF COMPUTER SCIENCE

- GPA : 4.0/4.0

Beaumont, TX

Aug. 2019 - Present

Aug. 2020 - present

Ferdowsi University of Mashhad (FUM)

B.Sc. IN COMPUTER ENGINEERING

- Thesis Title : Multiple Magnet Localization with Medical Applications

Mashhad, Iran

Sep. 2013 - Sep. 2018

Skills

Programming C/C++, Matlab, Node.js., Python **Familiar:** HTML, Node add-ons, Linux Shell Programming, device tree (DTS).

ARM ST controller(STM32Cube, eclipse),

Embedded Sys. **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:** Pytorch, Matlab, OpenCV, Intel RealSense Cameras. **Familiar:** Tensorflow, Keras.

Other Microsoft Office, T_EX, Visual studio, Eclipse, VScode, git, Docker, Linux OS command line.

Experience

Road Damage Object Detection and Classification Using SOTA Deep CNN

RESEARCH ASSISTANT, RICS LAB

Beaumont, TX

Oct. 2019 - Present

- Experienced with State of the art Object Detection Deep CNNs. ranging from ResNets, to EfficientDet.
- Hands-on with python, pytorch, and SOTA research platforms(e.g., detectron2 ...)
- Implemented a family of modern, scalable and efficient damage detectors with AP₅₀ 53.6, F1-score 56.5% and Inference Time 200 images/sec.
- familiar with different mechanisms to enhance the process of training and deploying a network (e.g. Auto-Augment, mixed precision training, ensemble methods, TTA, ...)
- Contributed to several Open-source GitHub repositories e.g. google/autoML, bbaug,

SLAM-Based 3D reconstruction on mobile robot and Motion Capture(MoCap) Analysis of multiple Crazyflie Drones.

RESEARCH ASSISTANT, RICS LAB

Beaumont, TX

Oct. 2019 - Present

- Experienced with ROS, MIT racecar platform, Intel Realsense Cameras, NVIDIA Jetson Boards, Crazyflie Drones.
- 3D reconstruction of areas with sparse features(e.g. tunnels) and implementation of swarm algorithms.
- Fusing different Odometry sources.
- Experienced different ROS tools e.g., RTABMAP, RVIZ, TF.
- Developed an Interface for linking MoCap to ROS and Matlab swarm Robotics algorithm to ROS .

Coral Detection and classification by Image Segmentation

FREELANCE

Beaumont, TX

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

RESEARCH ASSISTANT, FUM ADVANCED ROBOTICS LAB

Mashhad, Iran

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 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

RESEARCH ASSISTANT, FUM ADVANCED ROBOTICS LAB

Mashhad, Iran

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)

NODE.JS BACK-END DEVELOPER

Mashhad, Iran

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

BACK-END DEVELOPER, COMPUTER VISION DEVELOPER

Tehran & Mashhad, Iran

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 Pasokh-plus.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

EMBEDDED LINUX OS DEVELOPER

Mashhad, Iran

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

EMBEDDED DESIGNER AND DEVELOPER

Mashhad, Iran

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

- 2020 **4th Place** , IEEE BigData Big Cup Challenge - Road Damage Detection 2020(among USA participants)
- 2018 **3rd Place**, RoboCup IranOpen International Competitions - Fum-BionicHand in senior Demo League
- 2016 **Cultural Superior booth**, 19th Int. Exhibition of Computer IRANCOM and 6th Exhibition of SMART CITY
- 2013 **TOP 3%**, national Iranian Universities entrance exam, very competitive with nearly 330,000 participants.

Atlanta, GA, USA

Tehran, Iran

Mashhad, Iran

Iran

Teaching Experiences

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

Mashhad, Iran

Mashhad, Iran

Mashhad, Iran

Mashhad, Iran

Publications

AN EFFICIENT AND SCALABLE DEEP LEARNING APPROACH FOR ROAD DAMAGE DETECTION

2020

Sadra Naddaf-sh, M-Mahdi Naddaf-sh, Amir Kashani, Hassan Zargarzadeh

Submitted to IEEE BigData

DESIGN AND IMPLEMENTATION OF A MULTIPLE PERMANENT MAGNET TRACKING SYSTEM

2020

Sadra Naddaf-sh, 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)