Sayed Behzad Hossaini

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Education

2017–2020 **Master of Artificial Intelligence and Robotics** , Sadjad University, Mashhad, Iran.

Thesis title: Provide a hybrid method for generating markers to improve the image segmentation of the Watershed algorithm

Master's thesis grade 19.5 out of 20, ranked first in class
GPA: 16.02/20

2013–2017 **B.Sc. in Software Engineering**, Imam Reza International University, Mashhad, Iran.

Theses Title: Developing an android app with
unity engine Bachelor's thesis grade 19 out of 20
GPA: 15.28/20

Publications

- Sayed Behzad hossaini, Seyed Mohammadreza Mousavi, Amir Bavafa Toosi, "A Hybrid Marker Extraction Method by Gradient and Spectral Features for Marker-Controlled Watershed Segmentation ", Pattern Analysis and Applications journal, 2025 (under review) (The abstract can be provided upon request)

Experiences

Sep 2023 – Present Software Motion | Robotic, and Computer Vision Developer Researcher

- Technical Team Lead of the SLAM Group.
- Developed cutting-edge AGV system utilizing laser-guided navigation and point cloud analysis for precise localization and dynamic navigation within industrial environments.
- Fused GPS, IMU, visual odometry, and other sensors for localization. (Using Extended Kalman filter)
- Applied visual Slam for mobile robots in an unknown environment. (ORB-Slam3)
- Developing and testing fusion modules (EM, OM, RM) and performing SIL validation using Ego vehicle data.
- Working on calibration of various sensor types—including LiDAR, cameras, LiDAR-to-IMU, LiDAR-to-camera, and IPM—using both target-based and targetless methods.
- Generating Open drive HD maps based on point clouds which was created using Lio-SAM, Direct LiDAR Odometry. (Roadrunner)

2022-2023 Freelancer | Computer Vision Projects

- Developing a shallow and light weight Edge Detection Based on Attention and Ensemble techniques (Py-Torch ,Python).
- Developing a light weight Detection and segmentation of retinal vessels in optic Images (Py-Torch ,Python).
- Working on MobileNets, ShuffleNets, Resnet, ResnetXT, CBAM, DeformConv, GatedConv
- Implementing, tuning, and testing novel algorithms to enhance components such as filtering, segmentation, object classification, terrain classification, clustering, and tracking
- Experience multi object tracking and People counter (yolov8)

2021–2022 ITTALIEH | R & D AI developer

- Developed and implemented OCR system for Handwriting recognition in doctor's prescription (RCNN).
- Worked on date detection on prescription (Yolov5) and date recognition (pytesseract)
- Created a custom dataset for handwrite using the Label-Studio.
- Worked on libraries (PyTorch, TensorFlow, and Open CV) For image processing.
- Using attention mechanism and ensemble technique to increase the accuracy of network. Developed in Python (PyTorch)
- Experience with techniques involving Object Detection, Image Classification, Convolutional /Recurrent Neural Networks, and Hyperparameter Tuning.

2021–2021 Tecvico | R & D Engineer

- Conducted research on various attention mechanisms for medical image analysis
- Reviewed and analyzed PET-CT images and related research papers
- Developed deep learning segmentation models for medical images.

Projects

Sep 2021 Edge Detection Based on Attention and Ensemble techniques

- Using attention mechanism and ensemble technique to increase the accuracy of RCF network. Developed in Python (PyTorch)

May 2021 Capsule GAN

- Using deep convolution capsule layers in generator and discriminator of the generative adversarial network.
- Developed in Python (Keras)

Dec 2020 Discovery of Cell-Type Specific DNA Motif Grammar in Cis-Regulatory Elements

- Using a Random Forest (RF), Support Vector Machine (SVM) and Deep Neural Network (DNN) based approaches to build a multi-class classifier to predict the cell-type specificity of a transcription factor (TF) binding site given its motif content.
- Developed in MATLAB

Aug 2020 Detection of Brain Tumors in MRI Images

- Using transfer learning technique and ResNet-18 architecture for binary classification of MRI images .
- Developed in Python

Sep 2019 Detection and Recognition of Date in Medical Prescription

- Reading medical prescription's date and converting it to digital format (Yolo5 and CRNN) Developed in Python (PyTorch)

Skills

Programing Languages: Python, Matlab, C++, C#

Technical Tools: Python (TensorFlow, Pytorch, OpenCV, Keras, Pandas, Numpy, Matplotlib, Scikit-learn, OpenCV), OpenMMLab, Docker, Linux.

Robotic: Ros(Robotic operating system), SLAM, Gazebo, Rviz, Urdf, Sensors Calibration.

Familiar with: Microsoft Office, Adobe Illustrator, WordPress, Adobe Photoshop, Jupyter Notebook, Orange, Flutter

AI passed courses

Fuzzy system, Reinforcement learning, Evolutionary Algorithms, machine vision, pattern recognition, machine learning, Artificial Intelligence advance

Internship and Training Courses

Oct 2024 Motion Planning for Self-Driving Cars.
Sep 2024 Visual Perception for Self-Driving Cars.
Aug 2024 State Estimation and Localization for Self-Driving Cars.
July 2024 Introduction to Self-Driving Cars.
Dec 2023 Udemy logo ROS2 Point Clouds For Autonomous Self Driving Car using PCL
Nov 2023 ROS SLAM Navigation Stack and Custom Robot.
Jun 2021 Deep learning zero to hero (AIRCENTER).
Dec 2020 Image Processing OPENCV (Sadjad summer course) .
Dec 2019 Python (maktabkhone).

Language Skills

English: Professional working proficiency
Persian: Native

Research Interest

Robotic - Ros - SLAM - Deep learning - Image Processing - Reinforcement Learning - Computer vision - Natural language Processing