Mohamad Al Mdfaa

Machine Learning Engineer

✉ mohamad.almdfaa@gmail.com   📞 +79629508448

in linkedin.com/mohamad-al-mdfaa   ⌨ github.com/mhd-medfa

🌐 mlengineer.me

ABOUT ME

Blurring the line between human and machine perception. Ph.D. student in Mobile Robotics, specializing in 3D Computer Vision and Visual SLAM. Experienced in data science and machine learning. Passionate about leveraging computer vision to solve real-world problems. Flexible and ready to relocate for the opportunity.

PROFESSIONAL EXPERIENCE

Deep learning research intern at Mobile Robotics Lab, Skoltech University, 12/2022-Present

- Experimenting with Image retrieval and localization using self-supervised methods for localization.
- Contributed to a global neural-based indoor image localization pipeline using image retrieval and pose refinement using optimization techniques.
- Utilizing techniques such as Visual SLAM, SfM, Semantic Segmentation, Pose Estimation, Keypoint Extraction, Image Retrieval, IMU Integration, multimodal learning, and self-supervised learning.

Teaching assistant at Innopolis University,01/2022–12/2022

- Assisted in delivering Reinforcement Learning, Software System Analysis and Design, Software Project and Agile Development courses for graduate and undergraduate students.
- Acquired strong skills in communication, time management, problem-solving, and a deeper understanding of course material.
- Contributed to students' learning by providing additional support and resources.

AI engineer at WeStart (contract), 11/2021–02/2022

- Developed a tool for RSS-Feed Classification, using BART-based models for summarization and classification, then deployed the tool on AWS by using EC2, Lambda, and CloudWatch.
- Done research in reinforcement learning and the A/B testing pipeline for the recommender system's profile matching.

Lead AI engineer at BeeOrder, 02/2021–01/2022

- Built an AI system for estimating ETA (RETA) for delivery from restaurants by the best possible drivers for each client.
- Led the development of a system for sorting restaurants based on the business requirements.
- Optimized delivery routes and driver allocation through the Auto Dispatcher System, resulting in a 15-minute reduction in delivery time, achieving the UberEats average delivery time of 35 minutes.

Machine learning engineer at L-One Systems GmbH, 04/2019–08/2020

- Built a pipeline for mapping from RGB images to Hyperspectral using encoder-decoder and multi-scale CNN to build Plant Nutrient Detection (PND).
- Developed image analysis system to identify/quantify plant nutrient status using CNNs and different classical machine learning (SVM, Random Forest, Gradient Boosting, etc.)
- Enhanced Field Boundary Detection system by deploying instance segmentation and image processing to enhance the model performance.
- Shipped work to production using the AWS ecosystem and was responsible for satellite data processing.

AI developer at JoyBox, 06/2018–05/2019

- Created an AI virtual assistant for the visually impaired, utilizing speech-to-text and computer vision APIs to streamline daily routines. Contributed to an internal Motion Capture project for Cartoon production, employing Python, C#, Swift, Unity, and Kinect.

EDUCATION
Skoltech University 11/2022–Present
Ph.D. in Computer Vision and Visual SLAM

Innopolis University 09/2020–06/2022 . 2 years
Master's degree in Robotics & Computer Vision
GPA: 4.83/5 - graduated with honor

Damascus University 09/2012–09/2017 . 5 years
Bachelor's Degree in Computer and Automation Engineering
Top 10 Graduates award

PROJECTS

Vision-based Multi-rotor Aerial Vehicles Tracking for a Moving Object (Master's Thesis) 2022
- Developed a vision-based tracking system for multi-rotors to follow a moving object in real-time
- Utilized Visual Object Tracking, Deep Learning, and Camera Calibration technologies.
- Worked with ROS, Python, C++, PyTorch, OpenCV, Docker, Linux, and TensorRT.
- Published results in a Q1 journal.

Crowd-Copter Robot (graduation project) 2016
- Implemented unsupervised learning and computer vision approach for crowd movement analysis using KNN and Coherent Filter.

SKILLS
Advanced: Deep Learning, Computer Vision, Reinforcement Learning, Self-Supervised Learning, Visual SLAM, Visual Localization, Image Retrieval (for localization), YOLO
Technical Skills:
Advanced Python: OOP, multithreading, PyTorch, Numpy, Pandas, Open3D, OpenCV
C++: CMake, STL, Boost
Databases: MySQL, Redis
Linux: Bash scripting
Cloud: AWS (EC2, Fargate, Lambda, S3, SageMaker, CloudWatch, etc.)
Others: Git, Docker, Gitlab CI/CD, Ansible, RESTful APIs
Soft Skills: Agile Development, Leadership, Hardworking, Teamwork, Problem-Solving, and Communication

PUBLICATIONS
- Al Mdfaa, M. (2022). "3D-SiamMask: Vision-based Multi-rotor Aerial Vehicles Tracking for a Moving Object." Remote Sensing 14(22): 5756. [Manuscript], [GitHub], [Website]

LANGUAGES
English - full professional proficiency
Arabic - native
Russian - limited working proficiency
German - limited working proficiency