Yousif M. Elsheikh M.

+49-152-17278662 • Kaiserslautern, DE

Website/Projects: yoelsheikh.github.io • yoelsheikh@gmail.com, memohamm@rhrk.uni-kl.de

EDUCATION

Technische Universität Kaiserslautern   2024

Master of Science in Mechanical Engineering and Process Engineering with Specialization in Vehicle Technology   *Kaiserslautern, DE*
- *Thesis:* Reinforcement Learning on Sensor Data and Reaction Grid Maps, Robotics Systems Group
- *Relevant Courses:* CVT Programming Project, Embedded Intelligence, Machine Learning, Autonomous Mobile Robots, Robust Control, Human-Machine Systems Design, Robot and Motion Control, Seminar Electromobility
- *Projects:*
  I. "Genetic Algorithm-Based Optimal Control of the Inverted Pendulum System" – Scientific Writing & Publishing.
  II. "Application of Iterative LQR on Simple Robot Dynamics" – Seminar Electromobility.

University of Khartoum   2016

Bachelor of Science in Mechanical Engineering   *Khartum, SD*
- Second Class, Division One – Thesis in Control Engineering

PROFESSIONAL EXPERIENCE

IPG Automotive GmbH   Dec 2023 – Present

Simulation Backend Working Student   *Karlsruhe, DE*
- Development and Implementation of SIL-based V2X Communication such as Collective Perception Message (CPM) according to European/North American standards in CarMaker, using C code for variable computation.
- Responsible for extending and version control of the V2X interface in collaboration with the development team.
- Achievements – Implemented CPM messages and their integration into the interface.

Adam Riese GmbH   Nov 2022 – Sep 2023

Computer Vision Working Student   *Stuttgart, DE*
- Literature review, training, and evaluation using Python and PyTorch for the implementation of YOLO v7 in a multi-stage object detection pipeline in ONNX runtime.
- Further development of the pipeline for improved performance, including version control.
- Achievements – Trained, validated, benchmarked, and deployed the entire pipeline (live since Aug 2023).

WIS (Würth Industrie Service GmbH & Co. KG)   Mar 2022 – Sep 2022

Machine Learning Development Intern   *Bad Mergentheim, DE*
- Literature review, development, and application of 3D computer vision state-of-the-art techniques (PointNet/++, VoteNet, MobileNet-V2 etc.) for object localization and recognition for a robotic manipulator/gripper.
- GPU-accelerated training, evaluation, and testing of developed methods.
- Achievements – Successfully implemented 2D detection for computing the Z dimension using point cloud data and mapping to image frame – Confirmed the feasibility of directly learning the point cloud by VoteNet.

Technische Universität Kaiserslautern   Jul 2021 – Mar 2022

Student Research Assistant   *Kaiserslautern, DE*
- I. *RRLab (Robotics Research Lab):* Literature review, dataset generation, underwater object detection using FLS sonar data, and development of image processing algorithms in MATLAB & Finroc/C++. Validation through outdoor tests.
  II. *Dept. of Mechanical & Process Engineering:* Using GANs and autoencoders to generate GPR sensor data.

Hi-Force Engineering Works   Aug 2018 – Feb 2019

Design Engineer   *Khartum, SD*
- Design conception and implementation of design improvements using 3D modeling tools for cost reduction and functionality enhancement, including market research and design standardization.
- Achievements – Prepared complete technical and cost proposals winning a waterworks project (over 100k €).

University of Khartoum   Dec 2016 – Dec 2017

Teaching Assistant   *Khartum, SD*
- Conducted and managed tutorial sessions. Supervised subjects included: Fluid Mechanics I, Computer Applications, Measurement and Instrumentation, and Hydraulic & Pneumatic Power Transmission.

BASHIR MOTORS CO. LTD.   Mar 2014 – Apr 2014

Intern   *Khartum, SD*
- Training in the maintenance cycle and test specifications/inspection of Nissan vehicles.

ADDITIONAL INFORMATION

- *Skills*: Simulation, Machine Learning, Reinforcement Learning, Computer Vision, Deep Learning, Autonomous Driving, Linux, Unreal Engine, CarMaker, Docker, C/C++, Python (Stable Baselines, conda, PyTorch, TensorFlow/Keras, Open3D, Pandas, NumPy), Git, ROS/2, Finroc, OpenCV, CAD (SolidWorks, MATLAB + Simulink), MS Office Suite, MS Visual Studio/VS Code, Research • *Languages*: German (C1/DSH 2; LMU München, TU Kaiserslautern), English (IELTS band 7.5), Arabic (Native)