# AHMAD HASSANIEN

MASTERS OF NEUROROBOTICS, CHEMNITZ, GERMANY.

## SKILLS

**Deutsch: C1 (TestDaf)**
**Englisch: C1(IELTS)**

Python, C++, ROS2, Linux

Java, Git, Docker,

MATLAB, SIMULINK
Gazebo, Solidworks, AutoCad

SLAM, Sensor Fusion, Particle Filter, Kalman Filter, FPGA

Deep learning, Tensorflow, PyTorch, RNNs, CNNs, YOLO, Data augmentation, OpenCV, NumPy, Pandas

Transformers, LLMs

## EDUCATION

**TU Chemnitz, Germany**
Masters in Neurorobotics
Thesis Grade: 1.3
*Grade: 1.8*

**Hochschule Heilbronn, Germany**
Bachelor Thesis Project
Grade: 1.0

**The German University in Cairo, Egypt**
Bachelor In Mechatronics
Grade: 1.7

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## EXPERIENCE

**TU Chemnitz, Germany**

**October 2021 - Mai 2025**

1. Master's thesis project: Developed a novel approach for visual autonomous navigation in mobile robots. The goal for this project was to develop a bio-inspired alternative to traditional V-SLAM methods. It was inspired by models of insect brains (in particular: models for the optic lobe of the fruit fly (Drosophila melanogaster) and the central complex of the sweat bee (Megalopta genalis).
2. Research project: Development of an MPC (Model Predictive Controller) for a quadcopter to achieve fault tolerance. With this controller, the drone was able to stay in the air despite two damaged rotors.
3. Implemented a vision based self-driving, end-to-end-learning method using RNNs to solve the self-driving challenge from Udacity (Similar to Nvidia's DAVE2), trained with behavioural cloning. Extensive experience was gained with data augmentation to build the training data set.
4. Extensive study of deep learning object detection methods such as YOLO and R-CNN.
5. Extensive study of the Transformer architecture in LLMs

**The German University In Cairo, Egypt**

**July 2019 - Mai 2021**

1. Bachelor thesis: Development of a Particle Filter algorithm for state estimation for a virtual musical conductor using a micro radar sensor
2. Aratronics Lab GUC: Collaborated on the development of a rescue robot. Wrote the remote control code on Android (Java). The robot was controlled using TCP over Wi-Fi.
3. Robotics Project: Built a UGV from scratch, using a Raspberry Pi and an Arduino, DC motors, a 6-axis IMU, encoders, and a webcam. The UGV was controlled with ROS and was able to successfully follow a square path, with the use of a Kalman Filter to estimate the position of the robot. Additionally, using the camera and OpenCV on Python, the robot was able to locate a red target in the environment, autonomously approach it, and stop at a predefined distance from the object.
4. Development of a PID-controlled mobile robot that can follow a laser point.
5. Development of a bottle sorting machine with an FPGA.
6. As part of my hobbies I have built multiple android apps, from that I have a lot of experience with Java and Git.