Ahmed Fathy Abdelkhalek

📞 +20 121-098-0505   ✉ ahmedfathyabdelkhalek@gmail.com   🌐 Website   in LinkedIn

Experience

The German University in Cairo 🔗 — Sep 2024 - Jul 2025
Design and Production Teaching Assistant — *Cairo, Egypt*
- Instructed over 300 students in several courses including Advanced CNC, Industrial Automation, CAD/CAM, Material Removal, Electric Circuits II, and Production Technology.
- Assisted in the preparation of course content, quizzes, midterms and final exams for the aforementioned courses.

University of Stuttgart 🔗 — Nov 2024 - Nov 2024
GUC-IAS Workshop: Cooperation of Heterogenous Agents in Industrial Application — *Stuttgart, Germany*
- Worked on integrating three robots—a TurtleBot, a Unitree Go1, and a Franka Emika Panda—for seamless collaborative operations when performing sequential object handovers.
- Lead the Unitree Go1 team throughout the workshop, guiding, coaching, and directing team members to help achieve impressive results and boost team morale.

Smart Systems 🔗 — Jul 2024 - Sep 2024
Mechatronics Technical Engineer, KUKA Department — *Cairo, Egypt*
- Created smart and automated solutions for clients to perform a wide variety of applications using KUKA robots and their simulation platform, KUKA.Sim.
- Implemented over a dozen designs for various projects, including robotic cells, calibration tools, and robot welding tables.

JetSolar 🔗 — Oct 2023 - Apr 2024
Design and Manufacturing Engineer — *Giza, Egypt*
- Engineered and produced Egypt's first solar-powered PWRPOD, enhancing public workspaces with dedicated features for remote work and charging stations for e-scooters and e-bikes, boosting urban mobility efficiency.

Education

The German University in Cairo — Feb 2024 - Sep 2025
MSc in Engineering and Material Science, Mechatronics Department

The German University in Cairo — Sep 2018 - Jun 2023
BSc in Engineering and Material Science, Mechatronics Department

Skills

CAD: SolidWorks, AutoCAD, Inventor
Engineering Simulation: Simulink, Simscape Multibody, Gazebo, ANSYS, KUKA.Sim
Programming: MATLAB, Python, ROS, C++, KUKA Robot Language (KRL)
Professional: Documentation, data-driven decision making
Operating Systems: Windows, Linux (Ubuntu & Debian), Raspberry Pi OS
Languages: Arabic (Native), English (Fluent), German (Basic)

Projects

ROS Autonomous Vehicle 🔗 | *Python, ROS, Gazebo, Linux, SolidWorks, Embedded C* — Feb 2023 - Jun 2023
- Simulated a 1:18 scale vehicle using ROS and Gazebo to perform lane-keeping and lane-switching manoeuvres.
- Modified an off-the-shelf 1:18 scale car with multiple sensors, filters, and communication protocols for precise control and localisation to track a desired trajectory with 2.5% error.

Humanoid Arm 🔗 | *MATLAB, Simscape Multibody, SolidWorks, Embedded C* — Sep 2022 - Jan 2023
- Developed a comprehensive Simscape Multibody model to simulate and control an enhanced Poppy humanoid arm reducing development time by 30%.
- Manufactured and assembled the arm to improve the lives of individuals with tremors to carry out precise tasks with 98% accuracy.

Delta Robot 3D Printer 🔗 | *SolidWorks, Electronics, Marlin Firmware, Embedded C* — Jul 2022 - Sep 2022
- Designed a novel Delta robot 3D printer in SolidWorks, employing several principles in robotics and parallel manipulators.
- Manufactured, assembled, and tuned the printer to reach a competitive dimensional accuracy of 0.1 mm with over 2500 printing hours.
- Showcased the printer at the 3rd Annual Mechatronics Robotics Exhibition to introduce and highlight the unique advantages of parallel robotics to students .

Publications

A. Fathy, O. M. Shehata and E. -S. I. Morgan, "Development and Validation of Multi-Model Miniature Delta Robot Platform for Precise Manipulation Tasks," 2025 6th International Conference on Control, Robotics and Intelligent System (CCRIS), Guangzhou, China, 2025 🔗

A. Fathy, M. Ashraf and A. El-Badawy, "Computed torque control of a prismatic-input delta parallel robot," 2022 4th Novel Intelligent and Leading Emerging Sciences Conference (NILES), Giza, Egypt, 2022 🔗
Received the 3ʳᵈ Best Paper Award at the conference.

Certifications

SOLIDWORKS Additive Manufacturing Associate | **Dassault Systèmes** 🔗	*Jun 2025*
SOLIDWORKS CAD Design Professional | **Dassault Systèmes** 🔗	*Apr 2025*
Computer Vision for Engineering and Science Specialization | **Mathworks** 🔗	*Jun 2024*
Object Tracking and Motion Detection with Computer Vision | **Mathworks** 🔗	*Jun 2024*
Machine Learning for Computer Vision | **Mathworks** 🔗	*Jun 2024*