

# Tarek Shohdy

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## EDUCATION

**Egypt-Japan University of Science and Technology University (E-JUST)** Alexandria, Egypt  
BSc in Mechatronics and Robotics Engineering: CGPA:3.86 | Second of my class Oct. 2020 – Mar 2025

## GRADUATION THESIS

**Design, Modeling, Control, and Applications of Soft Legged Robots** Grade:A+ Feb 2024 - Feb 2025

- Developed an A2C RL, stabilized, pneumatically actuated, quadrupled soft-legged SoRoSim robot.
- Built a PPO-RL, electrically actuated, tripedal soft-legged SOFA simulated robot with 82% Success rate.
- Generated three unique gait sequences for the tripedal soft-legged robot with a maximum speed of 5 cm/min.




## RESEARCH EXPERIENCE Google Scholar

**Modelling of a PPO-RL Tripedal Soft-Legged Robot in SOFA.** | *IROS Conference* Feb 2024 - Oct 2025

- Entitled: Development of a PPO-Reinforcement Learned Walking Tripedal Soft-Legged Robot using SOFA.
- Developed an PPO-RL, tripedal soft-legged SOFA simulated robot reaching a single goal with 82% success rate, and a -not ready yet- squared error in curriculum learnt sequence of goals.

**Introduction of I2C Communication Protocol to SBRIO FPGA** | *MSSP Journal Q1* Sep 2024 - Mar 2025

- Entitled: Zero-Time Processing Data Acquisition Through The Introduction of I2C Protocol to SBRIO FPGA.
- Built a LabVIEW subroutine able to enable the I2C communication protocol and deal with multi-sensing elements, especially MPU6050 in our application, connected with the old-fashioned SBRIO FPGA in zero-time processing.


**Comparative Study on the Control of Self-Balancing Robot** | *IFAC conference*    Aug 2023 - Jun 2024

- Entitled: Model- and Data-Based control of Self-Balancing Robots: Practical Educational Approach with LabVIEW and Arduino. Published in the 18th IFAC Conference on Programmable Devices and Embedded Systems PDES.
- Implemented a PID controller, lead-lag controller, and fuzzy logic optimized through fine-tuning on three different surfaces, different friction coefficients, showcasing exceptional performance on self-balancing kit.


## PROJECTS

**Robocup@home Playground Competition** | *ROS1, ROS2, openCV* |   Feb 2023 & Feb 2024 & Jul 2024

- Won the 5th place internationally in Eindhoven, Netherlands 2024.
- Won the 2nd place regional in two consecutive years.
- Worked on ROS1 ready commercial platform; Jupiter Service Robot, then ROS2 using Pioneer-3dx Robot.

**Four-Wheeled Mecanum Mobile Robot** | *Arduino, Raspberry Pi, ROS2, PID control* |  Nov 2023- Feb 2024

- Designed and implemented navigation algorithms and control systems to enable precise motion planning.
- Handled ROS1-serial communication with ROS2-robot-URDF to reach the goal with tolerance of 0.05 meters.

**MathWorks Parrot Minidrone Competition** | *MATLAB, Simulink, Simscape* |  Aug 2022 - Nov 2022

- Coronated with the 2nd place on MENA region, 3rd place in Africa and one of the 9 finalists on EMEA.
- Simulated the Aerial Robotic Parrot Minidrone navigating a challenging course of 6 sharp corners in 52 seconds.

## WORK EXPERIENCE

**Mechanical & Robotics Intern** | *EgyRobo S.A.E* | New Administrative Capital, Egypt Aug 2024 - Nov 2024

- Designed and manufactured user-ready finished multiple robots and smart devices.
- Hands on Prusa Slicer & Cura for FDM 3D Printer, 3DWox for FFF 3D Printer, Formlabs for SLA 3D printer.
- Used CAM on SolidWorks and Fusion360 for vertical milling CNC and Creaform for a 3D Handy scanner.

**Mechatronics Engineering Intern** | *El Bawadi, Harvest Foods* | Alexandria, Egypt Jul 2024 - Aug 2024

- Inspected the work-flow, safety and quality of commercial products and tracked different lines' PLC ladder logic.


**PLC Software Intern** | *El Welely Group for Food Services* | Alexandria, Egypt Aug 2023 - Sep 2023

- Boosted the PLC software of the rice packaging machines performance to 50 products/hour more.




**Mechanical Engineering Intern** | *Ezz Dekheila Steel Co.EZDK* | Alexandria, Egypt Jul 2023 - Aug 2023

- Headed the Mechanical Systems maintenance team in the flat steel section and dealt with Nesting SolidWorks.

**3D Mechanical Designer** | *Bayern Systems Ltd. Company* | Doha, Qatar Jul 2022 - Oct 2023

- Designed a patent based pool lifting mechanism able to lift more than 5000 kg on 4.5 meters height. | 

**Robotics and 3D Mechanical Design Freelancer** | *UPWORK Platform* | Remote Jul 2022 - Present

- Built full electronics enclosures and created 50+ 3d printable parts and CAD models using SolidWorks. | 
- Simulated Orbita Robot in Unity3D and developed Swerve Robot PID controller with 2% overshoot. |  

## EXTRACURRICULAR ACTIVITIES

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- EJUST ROBOTICS CLUB** | *Team Member and Technical Mentor* Apr 2021 - Present
- **Mechanical Designer and Assembler of ROV** | 🏠 — participating in ROV'23 and UWR'23 Competitions
  - **Project Mechanical Team Mentor** | 🏠 — Moving Hoop H Gantry mechanism and Ball Balancing Robot.
- EJUST RACING TEAM** | *Mechanical Suspension Team Head* May 2022 - Feb 2024
- **Electric Vehicle Suspension System** | 🏠 — EVER Competition '23 [Canceled this year]

## FUNDINGS AND SCHOLARSHIPS

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- IEEE RAS (Robotics & Automation Society) IDEA** 19-25 Oct 2025
- Awarded the IDEA (Inclusion, Diversity, Equity, and Accessibility) travel support with a grant of \$3,300 USD to attend the IROS 2025 conference in Hangzhou, China.
- EJUST President & NTRA & We & ISF** 13-25 Jul 2024
- Funded with \$7000 USD in order to travel and compete in the international RoboCup@Home Playground Competition 2024 in Eindhoven, Netherlands.
- ASRT (Academy of Scientific Research & Technology)** Feb 2024 - Feb 2025
- As a graduation team, we recieved \$1500 USD for our bachelors graduation project to build the fully 3D printed tripedal soft-legged robot navigating to assigned locations.
- E-JUST President** Jul 2022 - Dec 2024
- As a part of E-JUST Robotics Club, we got a fund of \$5000 USD for participation in ROV, Robocup@home, Minesweepers, workshops and projects.
- E-JUST Excellence Scholarship** 2023 & 2024 & 2025
- Received the excellence scholarship for 3 consecutive academic years as of a CGPA more than or equals to 3.85 which secures 40% exemption from tuition fees.
- E-JUST STEM School Graduate Scholarship** Oct 2020 - Mar 2025
- Granted with the E-JUST STEM school graduate scholarship for all academic years which exempt the applicant from 50% from tuition fees.

## TECHNICAL SKILLS

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**Software Programs:** LabView, SOLIDWORKS, CAM, Nesting Works, FEA, Ansys, Ultimaker Cura, Prusa Slicer, Adams, Creality, Arduino IDE, VS Code, Simulink, and MATLAB

**Programming Languages:** C/C++, Python, MATLAB, Assembly, Arduino C, Lua, and LaTeX

**Framworks:** ROS1, ROS2, Gazebo, CoppeliaSim, Unity3d, OpenCV, and RVIZ

## CERTIFICATIONS

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- CSWP** | *Certified SolidWorks Professional in CAD Mechanical Design* Jan 2025
- Robocup @ home Playground competition** | *5th place international in Eindhoven, Netherlands* Jul 2024
- Robocup @ home education competition** | *2nd place regional* Feb 2024
- CSWA** | *Certified SolidWorks Associate in CAD Mechanical Design* Dec 2023
- ROV Competition** | *No Pain No Gain Prize in the 1st participation* Jul 2023
- Robocup @ home education competition** | *2nd place regional* Feb 2023
- MathWorks Parrot Minidrone competition participation** | *One of the 9 finalists on EMEA* Nov 2022
- MATLAB and Simulink** | *Onramp Courses:(MATLAB, Simulink, State flow, Control design)* Aug 2022
- University of California "Coursera"** | *IOT with Arduino and Raspberry Pi Interfacing* Jul 2022
- EDX** | *Mechatronics Evolution Fundamentals* Jun 2022
- DataCamp** | *Python (Introduction and Intermediate level)* Mar 2022
- LinkedIn** | *LinkedIn SolidWorks Skill Assessment Badge* Jan 2022

## LANGUAGES

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**IELTS** | British Council [Overall Band Score: 6.5] Listening: 7 — Reading: 6.5 — Writing: 6 — Speaking: 6