

HAZEM GAMAL EL-BANA

Mechatronics Engineer

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Military status: Exempted



Experience

- **Process and Tooling Engineer, Ghabbour Auto GB** **June 2021 - NOW**
 - Responsibilities: -
 - Evaluates manufacturing processes by designing and conducting research programs; applying knowledge of product design, fabrication, assembly, tooling, and materials; conferring with equipment vendors; soliciting observations from operators.
 - Prepares product and process reports by collecting, analyzing, and summarizing information and trends.
 - Design a printable welding and inspection fixture.
 - Implement a 3D printed prototypes for inspection and welding fixture for modified products.
 - Provides manufacturing engineering information by answering questions and requests.
 - Devise new solutions to existing manufacturing problems.
 - Projects: -
 - Design and implement a modification on long wheelbase Fuso Canter Truck.
 - Design an Accent RB Welding station by applying lean and 6 sigma concepts.
 - Develop a DIE spare parts Management system to track, record and predict the DIEs failure.
 - Create SOP and Work instruction for different product in the factory.
 - Diagnosing a product problem during the initial and final assembly stage and finding solutions to deliver the annotated to the production stage
- **Robotics Lab Engineer, British University in Egypt (BUE)** **OCT 2019 – June 2021**
 - Conduct research to determine the parameters of a robotic application.
 - Design robotic systems from start to finish.
 - Design , implement and maintain 3D printers , PCB CNC and laser engraving machines for educational use
 - Develop and implement software that will control robots.
 - Create prototypes and work on necessary components.
 - Create complete documentation for robotic systems.
 - Monitor the use of robotic systems and optimize their functionality.
 - Troubleshoot defects in different robot platforms.
 - Keep abreast of advancements in robotics and relevant fields of engineering.
 - Design and manufacture several Soft robotics End effector for research and development.
- **Maintenance trainee, Juhayna food industry factory.** **July 2018 - August 2018**
 - Learning the operation and maintenance the juice packing lines.
 - Learning how machines like filling machine, straw, packaging, buffer, and conveyors work.
 - Responsible to make a research to enhance the straw machine efficiency by finding method to predict the failure before it happens using machine control system and root cause analysis.

- **Maintenance trainee, Mantrac, Caterpillar Egypt.** **August 2018 – September 2018**
 - Learning the working principal of heavy equipment hydraulic system.
 - Learn how to follow company standard in receiving the equipment from customer, check the equipment and apply required maintenance.
 - How to identify the failure in the equipment using computer.
 - How to check the engine using oil contamination machine.
- **Maintenance trainee, Egypt Air, Ground Service.** **July 2017 - August 2017**
 - Understanding the diesel engine components.
 - Learning how to use factory service manual to make the service process correctly.
 - Learning how to use different machining process to make the service with accepted tolerance based on service manual standards.

Education

2014 - 2019

Bachelor of Engineering / British University in Egypt (BUE)

Mechanical Engineering Department | GPA (3.7 out of 4.0) - Distinction with Honours - 4th rank.

Validated by London South Bank University, UK - First Class Honours-

Graduation Research: "Investigation of soft robotic gripper for loading and unloading application "with complete design and control system. **Grade: 95%**

- Design soft actuator.
- Soft actuator/gripper simulation.
- Soft actuators fabrication.
- Test the gripper and enhance the design and control system.

Graduation Project: Design a full scale fully autonomous firefighting robot by applying artificial intelligence techniques. **Grade: 90%**

- Design Robot body, firefighting system, and insulation system.
 - Manufacture all robot components.
 - Attach artificial intelligence control system to the robot.
 - Control the robot by the special build Android application.
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Activities and Awards

- Member of BUE robotics Team, representing the BUE RoboGames Team and having 2 Gold, 2 Silver and 1 Bronze Medals in the RoboGames Competition in **San Francisco, USA, 2018**. With the following responsibilities: -
 - Design 7 robots based on competition standards.
 - Find the best manufacturing techniques.
 - Attach control system.
 - Enhance robot's efficiency after trials.
 - Best Design Project of Mechanical Engineering 2019.
 - **Publication Title:** - A Novel Design of The Utilization of Soft Grippers in Loading And Unloading Applications. FEB 8, 2020 ,<https://ieeexplore.ieee.org/document/9047779>
 - Member of BUE Electric Vehicle Rally team 2020.
 - Certified Six Sigma Green Belt, by Six Sigma Academy Amsterdam 2021
 - BUE Electric Vehicle Rally "EVER IV" - Electric system Supervisor 2022.
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ENGINEERING SKILLS

- **Design:** - Excellent command at using design software (e.g., SolidWorks, AutoCAD).
- **Simulation and design analysis:** - Good knowledge at using Finite Element analysis software to check the design using Ansys and Abaqus.
- **Manufacturing process:** - High knowledge and background in manufacturing process (e.g., sheet metal, metal folding, casting, machining, and welding).
- **Computer Numerical Control (CNC):** - High experience in design, manufacture and programing CNC lathes and mills with 3 and 4 axes as well as the 3D printing and Laser cutting; with high knowledge of tooling and machining varies metals and polymers to tight tolerances using SolidWorks AutoCAD, Inventor, ArtCam and G-code software.
- **Pneumatic circuits:** good understanding of the pneumatic circuit design, component and how to operate it.
- **Technical writing:** - Expert in writing technical and progress reports using Microsoft Word.
- **Excel programs:** - Expert in using Microsoft Excel to make programs to solve different engineering problems.
- **Presentation maker:** - Professional in making presentation using Microsoft PowerPoint.
- **Standardization:** - Applying international standards in design testing, evaluation, and acceptance.
- **Controllers:** - High experience with PLC controller and microcontrollers like Arduino, Node MCU and Raspberry Pi.
- **Programming:** - The ability to deal with different programming languages (e.g., Python, C, Matlab, PLC ladder diagram and Robot operating system (ROS))

Skills

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|-----------------------------------------------------|---------------------------------------------|
| • Data Analyst | • Ability to grasp the new skills. |
| • Excellent written and verbal communication skills | • Break down of project items. |
| • Highly organized and efficient. | • Team management, leadership. |
| • Product development. | • 3-D creation for the pre-kick off project |
| starting. | • Negotiation. |

PROJECTS

- Design program to calculate head loses of pipes using excel.
- Design program to calculate the stress analysis of gears and shafts using excel.
- Design program to calculate and draw infrastructure piping network from A to Z using excel.
- Maintain our factory for Rice manufacturing and packaging equipment's (e.g., rice mills, 3 phases motors, shakers, and conveyors).
- Build an artificial intelligence Neural Network system for image processing and color tracking system.
- Build an artificial intelligence deep learning face recognition and tracing system.
- Design and manufacture a 3D-printer double extruder.

- Design 3D printer filament extruder by re-using the defected 3D printed parts.
- Design and manufacture a 3 axis CNC machine.

Courses

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| • PMP Certification Exam Prep Course 35 PDU Contact Hours/PDU | 2023 |
| • Introduction To Power Bi, online course | 2022 |
| • One Minute Manager Workshop, GB Auto Academy. | 2022 |
| • Certified Six Sigma Green Belt, by Six Sigma Academy Amsterdam | 2021 |
| • Lean Management Certification Course, by Six Sigma Academy Amsterdam | 2021 |
| • G-Code Programming for CNC Foundations Design program, By: Gabriel Corbett | 2021 |
| • Learn Industrial Automation, By: Zahraa Khalil | 2021 |
| • Learning PLC Ladder Logic, By: Zahraa Khalil | 2021 |
| • Raspberry Pi Essential Training, By: Mark Niemann-Ross | 2020 |
| • Learning Arduino: Pulse Width Modulation | 2020 |
| • Additive Manufacturing: Troubleshooting 3D Prints | 2020 |
| • ROS for Beginners: Basics, Motion, and OpenCV | 2019 |
| • Excel, Online Course from Linda.com Academy. | From 2015 to 2017 |
| • Solid works Online Course from Linda.com Academy | From 2015 to 2017 |
| • AutoCAD Online Course from Linda.com Academy. | From 2010 to 2016 |
| • English Course at Canadian Language Center (CLC) | 2012 |
| • Advanced English course, Side by Side, Long Man, | 2011 |

HOBBIES AND ACTIVITIES

- DIY activities. Travelling, and welding).