

Mohammed Buhlaigah – Mechanical Engineering

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EDUCATION

The University of Michigan, Ann Arbor, MI
Master of Science and Engineering in Mechanical Engineering

August 2022 – May 2024

GPA: 4.00

Relevant Courses:

- Digital Control systems
- Sensors, Data, and Smart Systems
- Applied Optimal Controls
- Mechanical Vibrations

The Pennsylvania State University, University Park, PA
Bachelor of Science in Mechanical Engineering

June 2018 - May 2022

GPA: 3.98

Honors:

- Dean's List – all eligible semesters
- Graduated Summa Cum Laude

Relevant Courses:

- Mechatronics
- Automatic Control Systems
- Numerical Computations
- Machine Learning in Engineering
- Vibration of Mechanical Systems
- Thermodynamics

RESEARCH EXPERIENCE

The University of Michigan, Ann Arbor, MI
Graduate Research Assistant, Precision Systems Design Laboratory
Design of a High-Performance Robotic Elbow

January – May 2023

- Integrated linkage mechanism, brushless-DC (BLDC) motor, ball screw, to design an efficient mechanical elbow with minimal weight.
- Combined mechanical elbow with shoulder and wrist to create a bird wing inspired by the California Condor.

The University of Michigan, Ann Arbor, MI
Graduate Research Assistant, Precision Systems Design Laboratory
Electrostatic Transmission for Extrinsically Powered Prosthesis

September 2022 – December 2023

- Designed a DC to AC converter circuit using an Arduino and double-pole-double-throw (DPDT) relay.
- Manufactured and evaluated a comb-shaped electrostatic clutch using a CNC machine.
- Chemically fabricated a dielectric layer using poly (vinylidene fluoride-trifluoroethylene-chlorofluoroethylene) (P(VDF-TrFE-CFE)).

King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia
Intern, Nano/Micro Mechanics and Motion (NM3) Laboratory

June – August 2021

- Collaborated with a team to develop analytical model and conduct simulation to study beams in micro-electro-mechanical systems (MEMS).
- Presented project on “Studying the Effect of Changing Geometric and Material Properties on the Buckling Point of Straight Clamped-Clamped Microbeams”.

The Pennsylvania State University, University Park, PA
Undergraduate Research Assistant, Bio-Motion Systems Laboratory
Active Visual Sensing in Flight

January – May 2020

- Conducted experiments on flies in a virtual reality arena.
- Analyzed data to study the flies' response to stimuli using active visual sensing.
- Automated MATLAB script to process data.

The Pennsylvania State University, University Park, PA
Undergraduate Research Assistant, Bio-Motion Systems Laboratory
Mechanosensory Influence on Gaze Stabilization in Flies

June – August 2019

- Conducted experiments on flies in a virtual reality arena.
- Analyzed data to study the flies' response to stimuli using mechanosensory input.
- Presented findings at summer research symposium.

LEADERSHIP & DEVELOPMENT

The University of Michigan, Ann Arbor, MI

August 2023 – Present

Treasurer, Saudi Student Association

- Responsible for raising funds and managing the association's budget.
- Working with fellow board members to represent Saudi Arabia and create a sense of community.

McKinsey Forward, Online

June 2023 – Present

A career development program for young professionals focused on leadership, business, and digital skills.

WORK EXPERIENCE

The University of Michigan, Ann Arbor, MI

Data Processing, Department of Mechanical Engineering

September 2022 – May 2023

- Developed MATLAB script to identify noise in inertial measurement unit (IMU) data in running human subjects.
- Eliminated over five thousand noise points in IMU data with attention to detail.

PROJECT EXPERIENCE

Pennsylvania State University, University Park, PA

January – May 2022

Lead Control Engineer, Budget Manager, Wax Solidification Apparatus (Senior design project)

- Collaborated with a team to design and fabricate a cuboid-shaped apparatus filled with wax.
- Built an electrothermal system to create a vertical solidification front of wax.
- Implemented PID controller to the heaters using solid state relays, an Arduino, and a power supply.
- Managed the team budget.

Pennsylvania State University, University Park, PA

August – December 2020

Project Manager, Lead Programmer, Autonomous Etch-A-Sketch

- Managed a team of three to design an autonomous Etch-A-Sketch.
- Created an algorithm to convert a JPG image into a set of instructions for the autonomous Etch-A-Sketch to draw.
- Wrote a proposal for shaker system that erases the Etch-A-Sketch drawings.

Arizona State University, Phoenix, AZ

June – July 2020

Participant, Global Entrepreneurship and Innovation Program

- Engaged in entrepreneurial process from team formation to idea development and pitching to potential investors.
- Conducted market analysis study.
- Designed user interface of a pet adoption application.

SKILLS

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|---|--|
| • Arduino | • Google Suite (Drive, Docs, Sheets, Slides) |
| • Machine learning | • Microsoft Office |
| • Adobe Illustrator | • Online cloud management |
| • MATLAB | • Communication |
| • Simulink | • Budget management |
| • Script automation | • Time management and organization |
| • Data Collection | • Team management |
| • Data analysis | |
| • CAD and simulation (SolidWorks, COMSOL Multiphysics, and Tinkercad) | |

LANGUAGES

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| • Arabic – Native | • English – Fluent |
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AWARDS & SCHOLARSHIPS

Saudi Arabian Cultural Mission (SACM) Pioneer Scholarship

August 2022 – Present

- Fully paid scholarship for a master's degree in one of the top thirty institute world-wide

King Abdullah University of Science and Technology (KAUST) Gifted Student Program (KGSP) April 2017 – May 2022

- KGSP is a prestigious scholarship awarded by KAUST to a select group of Saudi students allowing them to pursue undergraduate degrees in STEM fields in the US.

American Society of Mechanical Engineers (ASME)

January 2022 – Present