

BILAL ELALFY

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OBJECTIVE

Fresh graduate in Control and Instrumentation Engineering from KFUPM, with proven project experience spanning robotics, computer vision, autonomous systems, and advanced control. Passionate about building intelligent and automated solutions, and eager to bring technical depth and fresh perspective to a forward-thinking engineering team.

EDUCATION

BS in Control and Instrumentation Engineering

2022-2026

King Fahd University of Petroleum and Minerals (KFUPM),
Dhahran, Saudi Arabia

High School, Ahlia Schools

2020-2022

King Fahd University of Petroleum and Minerals (KFUPM),
Dhahran, Saudi Arabia

CGA: 99.78%, GAT: 98%, SAAT: 94%

WORK EXPERIENCE

Summer Intern, IRC for Sustainable Energy Systems

Jun 2025 – Aug 2025

Dhahran, Saudi Arabia

- Implemented closed-loop PI/PID speed control for a DC shunt motor using NI myRIO and LabVIEW, achieving reliable speed tracking with minimal overshoot.
- Integrated analog current and voltage sensors (LEM LA-100P, LV-25P) through isolation modules and developed real-time data acquisition VIs.
- Designed and applied a Moving Average Filter in LabVIEW to reduce electrical noise and stabilize closed-loop control performance.
- Conducted open-loop PWM characterization and tuned PID gains through systematic experimental testing and step response analysis.

Administrative Team Member, Mawhiba Program

Jun 2025 – Jul 2025

Dhahran, Saudi Arabia

- Supported administrative operations, participant coordination, and event management activities.
- Assisted in documentation, reporting, and communication processes.

Administrative Team Member, Mawhiba Program
Dhahran, Saudi Arabia

Jul 2023 – Aug 2023

- Assisted in documentation, reporting, and communication processes. Assisted in organizing educational activities and supporting program operations.
- Collaborated with team members to ensure smooth event execution.

PROJECTS

Bladeless Spherical Drone Concept Development

- Contributed to the design of a novel enclosed UAV platform utilizing internal propulsion and thrust-vectoring concepts to improve operational safety, stability, and system robustness.

Autonomous Road Inspection Robot

- Designed an AI-powered mobile robot capable of autonomous navigation and road-condition assessment using computer vision, LiDAR, and real-time reporting techniques.

AI-Powered Vision-Guided Smart Car

- Developed an autonomous smart car combining computer vision and PID control to recognize visual commands and accurately regulate stopping distance.

Industrial Process Modeling & Advanced Control

- Developed dynamic process models and implemented PID, LQI, and MPC controllers to enhance system tracking performance and disturbance rejection.

Intelligent Robot Navigation & Obstacle Avoidance

- Implemented autonomous path planning and real-time obstacle avoidance using computer vision, adaptive decision-making, and robotic control algorithms.

Multi-Robot Autonomous Object Handling System

- Designed a vision-based dual-robot system capable of object detection, tracking, grasping, and autonomous object relocation.

Heat Exchanger Dynamic Modeling & System Identification

- Developed mathematical process models and applied system identification techniques to analyze and predict heat exchanger dynamics using MATLAB.

Smart Water Heating Control System

- Designed a closed-loop temperature control system integrating sensors, embedded control, safety interlocks, and real-time monitoring.

PLC-Based Automated Sorting & Packaging System

- Programmed a dual-conveyor PLC system to autonomously detect, classify, and sort metal and plastic parts, including defect detection and rejection logic.

10-Segment Circle — Digital Logic Design

- Designed and implemented a combinational logic circuit using AND, OR, and XOR gates, applying K-maps and Boolean simplification to minimize hardware complexity.

Smart Glasses for Visually Impaired People

- Developed an assistive wearable device integrating computer vision and AI to support real-time environmental awareness for visually impaired users.

TECHNICAL SKILLS

Programming & Software Tools

- Python, C, Arduino, MATLAB/Simulink, OpenCV
- Google Colab, Windows, Linux, Microsoft Office, Overleaf/Latex

Robotics & Artificial Intelligence:

- Computer Vision, Machine Learning, Object Detection, Path Planning and Autonomous Navigation

Control & Automation

- PID Control, Process Control, System Identification, Dynamic Modeling

LEADERSHIP, STUDENT ACTIVITIES & VOLUNTEER WORK

Vice Leader, Academic Committee

KFUPM Control & Instrumentation Engineering Club

Jan 2026 – May 2026

Academic Affairs Member

CIE Student Council

Nov 2025 – May 2026

Professional Development Committee Member

KFUPM Industrial & Systems Engineering Club

Oct 2025 – May 2026

Technical Committee Member

Voluntary Work Unit at KFUPM

Aug 2025 – Feb 2026

Member

KFUPM Control & Instrumentation Engineering Club

KFUPM Institute for Knowledge Exchange (KIKX)

Feb 2025

- Served in the registration and crowd-management team during the Quantum Computing & Technology Symposium.
- Assisted in event organization and participant coordination.

CERTIFICATIONS AND ATTENDANCE OF TECHNICAL EVENTS

- EASA Drone Pilot Training (A1/A3 Open Category)
- Python Object-Oriented Programming
- PLC Workshop Certificate

- Community Work Principles and Fundamentals (Raed Basic)
- Beginner Financial Statements
- Global Students Research Conference (GSR), KFUPM, 2026
- AI Transforming Systems (AITS), KFUPM, 5-6 Feb. 2025
- Symposium of Quantum Computing and Technology, KFUPM, 17-18 Feb. 2025

AWARDS

Highest Public Voted Project Award, 14th KFUPM Senior Design Expo – 2026
"Spherical Bladeless-Exterior Drone with Internal EDFs and Vectorized Air-Jets"

LANGUAGES

Arabic: Native

English: Fluent

REFERENCES

Available upon request