

## EDUCATION

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**King Fahd University of Petroleum and Minerals (KFUPM)**  
**Bachelor of Engineering**

Dhahran, SA  
August 2020 – May 2025

**Major in Aerospace Engineering, First Class Honors**

**Minor in Space Systems Engineering**

**Relevant Coursework:** Spacecraft (Guidance, Navigation, and Control), Systems and Control, Spacecraft Systems Engineering, Astronautics, Introduction to Astronomy, Satellite Earth Observation and Data Analysis, Aerospace Vehicle Design, Flight Dynamics, ME Drawing and Graphics, Structure & Material, and Fundamentals of Electrical Circuits.

## RESEARCH INTERESTS

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- Autonomous Systems, Guidance, Navigation, and Control.
- Space robotics and multi-vehicle coordination.
- Small satellites design and optimization.

## SCHOLARSHIPS

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**Emerging Professor Program (EPP) at KFUPM**

August 2025 – Present

- Supported by KFUPM to undertake graduate studies at top tier universities.
- Candidate for a faculty position in the Department of Aerospace Engineering at KFUPM.

**Saudi Arabian Cultural Mission (SACM)**

Upon Approval

- The (SACM) scholarship, funded by the Saudi Arabian government, provides full financial support for the entire graduate program, including tuition, fees, and a monthly living stipend.
- The award is guaranteed upon an admission to an accredited university in the United States.

## AEROSPACE ENGINEERING PROJECTS & RESEARCH EXPERIENCE

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**The TriRaptor: A Three Environmental Vehicle**

KFUPM, Dr. Uthman Baroudi

August 2024 – May 2025

- Investigated control system design for multi-environment operation, including robust PID controllers and adaptive control strategies.
- Analyzed and optimized vehicle stability during transitions between air and water environments.
- Developed wireless communication protocols for underwater operation, including frequency adaptation and signal reliability testing.
- Conducted end-to-end prototyping, simulation, and experimental validation.

**Reaction wheel based 8U CubeSat**

KFUPM, Dr. Atif Mahmood

January 2025 – March 2025

- With a team of 4 we built a CubeSat based on GNC principles.
- Successfully implemented a PID code to control the reaction wheels.

## **Numerical analysis of the thermal behavior of a 1U CubeSat using COMSOL Multiphysics**

KFUPM, Dr. Hassan Ali Abid

January 2025 – March 2025

- Analyzed CubeSat thermal management under varying orbital conditions at a 400 km altitude.
- Developed a model using finite element analysis to simulate heat transfer and orbital thermal interactions.

## **Launchable small satellite (CanSat)**

KFUPM, Dr. Abrar Baluch

September 2024 – November 2024

- Led a team of 4 in building a Launchable small satellite that collects atmospheric data and transmits it to a ground station via LORA module.
- Implemented sensor integration and real-time data transmission systems.

## **PID controller tool**

KFUPM, Dr. Syed Saad Azhar

February 2024 – May 2024

- Designed and implemented a self-balancing system utilizing a PID controller with parameter tuning.
- Awarded First place among more than 7 teams.

## **Simulating a step response of a model based on its differential equation using MATLAB & Simulink**

KFUPM, Dr. Syed Saad Azhar Ali

April 2024 – May 2024

- Analyzed the system's step response by evaluating overshoot, settling time, and peak time after simulation.
- Assessed system stability by obtaining its transfer function and examining the locations of its poles.

## **Carbon fiber drone, Independent Project**

- Built and tested a complete 10-inch propeller size drone made out of carbon fiber.
- Designed and 3D printed specific components to serve as ESC holders.

## **CFD Analysis of an airfoil with rotating cylinders using ANSYS Fluent**

KFUPM, Dr. Salman Al-Fifi

April 2024 – May 2024

- Conducted CFD analysis on an airfoil to evaluate the increase in lift-to-drag ratio achieved by introducing rotating cylinders.
- Compare the results with those of an airfoil equipped with non-rotating cylinders.

## **High-speed airflow study over a supersonic airfoil using COMSOL Multiphysics**

KFUPM, Dr. Hassan Ali Abid

January 2025 – March 2025

- Conducted a CFD study of high-speed airflow over a supersonic airfoil.
- Analyzed shock waves, expansion fans, and flow characteristics.

## **Cargo aircraft 3D model in SolidWorks**

KFUPM, Dr. Mohammad Irfan Alam

September 2024 – November 2024

- Designed a full-scale 3D model of cargo aircraft in SolidWorks, including special loading and unloading mechanism.
- Achievement: Awarded best team among more than 5 teams.

## **Linear static tensile analysis of a rectangular specimen using ANSYS Static**

KFUPM, Dr. Suhail Hyder Vattathurvalappil

November 2023 – December 2023

- Analyzed stress, strain, and deformation values on the specimen under applied load.
- Identified the optimal material based on the load requirements.

### **Drone 3D model in SolidWorks**

KFUPM, Mr. AbdulRahman Aravind

November 2023 – December 2023

- Designed functional drone with accurate mechanical components.
- Created special drone arm system designed for extending to pick up targets.

### **Glory satellite physical prototype**

KFUPM, Dr. Abrar Baluch

November 2023 – December 2023

- Built a full hand-made replicate of the GLORY satellite.
- Achievement: First Place in Aerospace engineering project competition.

### **Fixed wing RC aircraft, Independent Project**

- Designed and constructed a fixed-wing (Clark-Y) aircraft with emphasis on aerodynamics and control systems.
- Optimized flight performance through iterative design improvements.

### **F117 Nighthawk RC aircraft, Independent Project**

- Built and successfully piloted a radio-controlled model of the military stealth aircraft **F117**.

### **3D model of the Rafale fighter jet in SolidWorks, Independent Project**

- Designed the French fighter jet Rafale.
- Covered major design aspects including aerodynamics and propulsion.

## **WORK EXPERIENCE**

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### **TriRaptor**

Dhahran, SA  
August 2024 –

- Founder and team leader of the TriRaptor project. A first-of-its-kind vehicle capable of operating across water, land, and air.
- Leading efforts in design, subsystem integration, and waterproofing to ensure seamless multi-environment performance.
- Awarded as The Most Innovative Project Award among more than 120 projects.

### **Personal Laboratory**

Makkah & Dhahran, SA  
August 2023 –

- Built a personal laboratory equipped with a 3D printer, precision tools, electronic components, a soldering station, and a high-performance computer for simulation and design.
- completed more than twenty-five projects ranging from drones, aircraft, CubeSats, and CanSats to various simulations.

### **Consultant for the Structural Team of AstroArabia at KFUPM**

Dhahran, SA  
Jan 2025 – April 2025

- Served as a consultant for KFUPM AstroArabia's structural team in building a 4U launchable CubeSat in collaboration with the Saudi Space Agency (SSA).

### **Summer International Training at Schlumberger (SLB)**

Ploiești, Romania  
July 2024 – August 2024

- Participated in a structured international training program focused on advanced engineering solutions.
- Gained hands-on experience with industrial operations, safety protocols, and multinational team collaboration.

### **Summer Training at Cameron**

Dhahran, SA  
Jun 2024 – July 2024

- Gained hands-on experience with industrial CNC machines.
- Completed certified safety training for workplace and laboratory environments.

## HONORS&AWARDS

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- Graduation with Highest Honors: received the First-Class Honors Shield
- First - Honor Distinction for academic excellence. QTY: 5
- Second - Honor Distinction for academic excellence. QTY: 1
- Third - Honor Distinction for academic excellence. QTY: 1
- Best Innovative Project Award for senior project.
- First - Place Awards for university projects. QTY: 5

## TECHNICAL SKILLS

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- Experienced in Small Satellites Technology.
- Experienced in drone design.
- Skilled in 3D modeling using SolidWorks.
- Skilled in 3D printing.
- Advanced in structural and CFD simulations with ANSYS.
- Competent in Python, C++, and MATLAB programing.

## EXTRACURRICULAR ACTIVITIES

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- Assisted fellow students with academic projects and exam preparation by sharing practical knowledge gained from my personal lab work and providing access to tools such as soldering equipment, calipers, and 3D printing resources.
- Member of the KFUPM Sports Club; organized two university-wide sports competitions.
- Achieved 2nd place in the 2021 Muay Thai Championship organized by the Saudi Ministry of Sport.

## ADDITIONAL

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### Languages:

- Arabic: Native speaker
- English: Fluent in speaking, reading, and writing (IELTS Score: 7.5)

**Certifications & Training:** Mawhiba Student from 2011 to 2017, First Aid Emergency Certification (EDRAAK, 2020)