

SHYAM RAUNIYAR

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EDUCATION

Master of Science in Aerospace Engineering (CGPA: 3.963) **Expected Graduation – Dec 2023**
University of Cincinnati (UC), Cincinnati, OH

- 3D resolution algorithm for collision avoidance of UAVs optimized using Genetic Fuzzy System ([MS Thesis](#)).
- Analyzed IBM HR Data for prediction of attrition of the employees using **ML Techniques** (2021).

Master of Business Administration (CGPA: 3.76) **Aug 2018 – Jan 2021**
Kathmandu University, Kathmandu, Bagmati

- Conducted Paaila Technology's ventilator project feasibility study using capital budgeting ([MBA Thesis](#)).
- Designed a **prototype** of an Air Purifier System as an idea for Concept Development for Impact by BUCSBIN, 2018.

Bachelor's Degree in Mechanical Engineering (CGPA: 81.04%) **Nov 2013 – Feb 2018**
Tribhuvan University, Kathmandu, Bagmati

- Developed an **aircraft performance** calculation and optimization tool in MATLAB ([BS Thesis](#)).
- Conducted a **motion analysis** of a concept CycloGyro in **SolidWorks** to confirm its physical principles.
- Fabricated a sub-scale wooden model of Wright Flyer for Aviation Museum at Kathmandu.

WORK EXPERIENCE

Control Systems Engineer (Volunteer) **Mar 2023 –**
Angel Aerial Systems

- **Mathematical modelling** of proposed three-mode **drone** system and design of its **robust control methods**.
- **CFD simulation** of the drone components for **design optimization** and to determine lift coefficients for **control law**.
- Redesigned the drone to facilitate the assembly procedure and incorporate optimized wings.

Graduate Researcher **Dec 2020 –**
Intelligent Autonomous Systems Research Laboratory (IASRL), UC

- Experimental verification of proposed **control and collision avoidance algorithms** for quadcopters at IASRL
 - **Implementing** and **testing** the algorithms in **Crazyflie 2.1** using **Motion Capture System** and **ROS2**.
 - Developed a collision avoidance experimental setup/architecture for Crazyflie using **ROS2**.
- Developed of a robust Indoor Positioning System (IPS) for a ground robotic platform using UWB sensors.

Graduate Assistant **Jan 2021 –**
UC, Cincinnati, OH

- Served as a teaching assistant for Solid Mechanics and Basic Fluid Dynamics.
- Perform daily administrative tasks at the front desk of Graduate Studies department.

Mechanical Engineer **Nov 2017 – Dec 2020**
Paaila Technology Pvt. Ltd., Lalitpur, Nepal

- Lead designer engineer for assistant robot, [Pari 2.0](#)
 - **Designed, fabricated, and tested** performance of the robotic arm, neck, base and exoskeleton of Pari 2.0.
 - Generated and verified URDF files of [Pari 2.0](#) robot for its simulation using **ROS** and **Gazebo**.
- Collaborated with a US team to **design and develop** a low-cost [ventilator](#) to tackle COVID-19.
 - Conceptualized the air-flow architecture and removable cartridge systems for easy maintenance.
 - Designed its major parts like inspiration and expiration manifolds, electronic components, and chassis.
- Supervised the **3D printing** processes and ensured regular maintenance of 3D printers.

Mechanical Designer **Oct 2014 – Sep 2017**
Robotics Club, IOE, Lalitpur, Nepal

- Ideated service mechanism for badminton robots that won **Best Idea Award in ABU Robocon 2015**.
- Designed pole climbing mechanism for the robot that won **Best Engineering Award in ABU Robocon 2016**.

SKILLS

Languages:	CAD/CAM:	Programming:	Analytical Tools:	Creative Editing:	Office:
English,	SolidWorks,	MATLAB, Simulink	MS Excel,	Adobe Photoshop,	MS Word,
Nepali,	Catia,	Python, C,	SPSS,	Adobe Premier.	MS PowerPoint,
Hindi.	AutoCAD.	C++, Git.	ANSYS.		MS Access.

PUBLICATIONS AND CONFERENCES

- **S. Rauniyar, S. Bhalla, D. Choi, and D. Kim, "EKF-SLAM for Quadcopter** using Differential Flatness-based **LQR Control**,"
 - *Electronics*, Vol. 12, No. 5, pp. 1-21, Feb. 24, 2023. ([Published](#))
 - *International Symposium on Space Flight Dynamics*, Beijing, China (Hybrid), Aug. 29 - Sep. 2, 2022.
- **S. Rauniyar and D. Kim, "Genetic Fuzzy Inference System-Based Three-Dimensional Resolution Algorithm for Collision Avoidance of Fixed-Wing UAVs,"**
 - *Electronics*, Vol. 12, No. 18, pp. 1-24, Sep. 19, 2023. ([Published](#))
 - *2023 NAFIPS*, Cincinnati, OH, May 31 – Jun. 02, 2023.
 - *2023 AIAA Region III Student Conference*, Dayton, OH, Mar. 24-25, 2023. ([Best Paper in Master's Category](#))