EDHITHA

UNMANNED AERIAL SYSTEMS

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About Us

Edhitha is a dedicated group of multidisciplinary engineering students from Ramaiah Institute of Technology, Bangalore, who aim to explore, develop and expand technologies in the field of Unmanned Aerial Systems (UAVs).

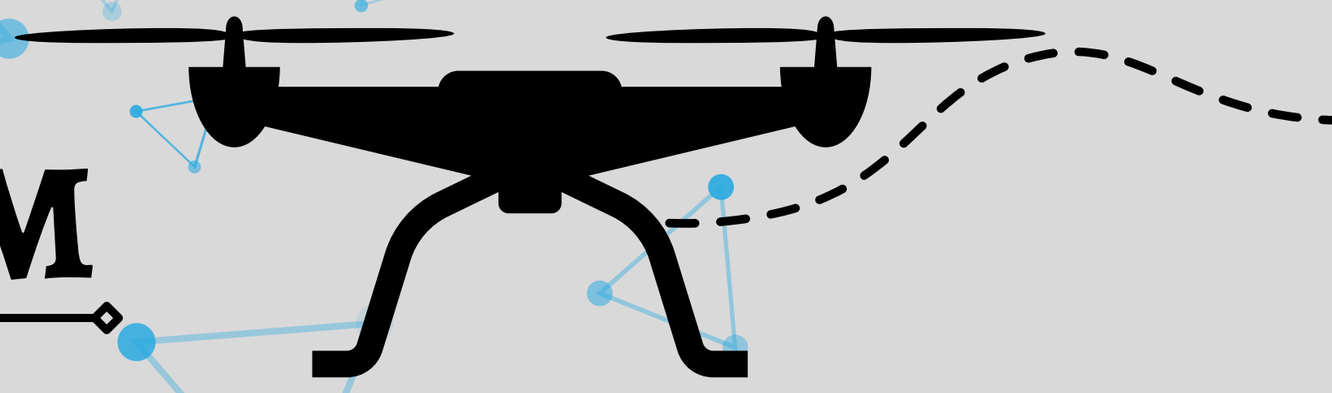
Our Official Website: www.edhitha.com

Introduction

Edhitha actively participates in the annual Association of Unmanned Vehicle Systems International (AUVSI) Students Unmanned Aerial Systems (SUAS) competition organized by the Seafarer Chapter of the US Navy in Maryland.

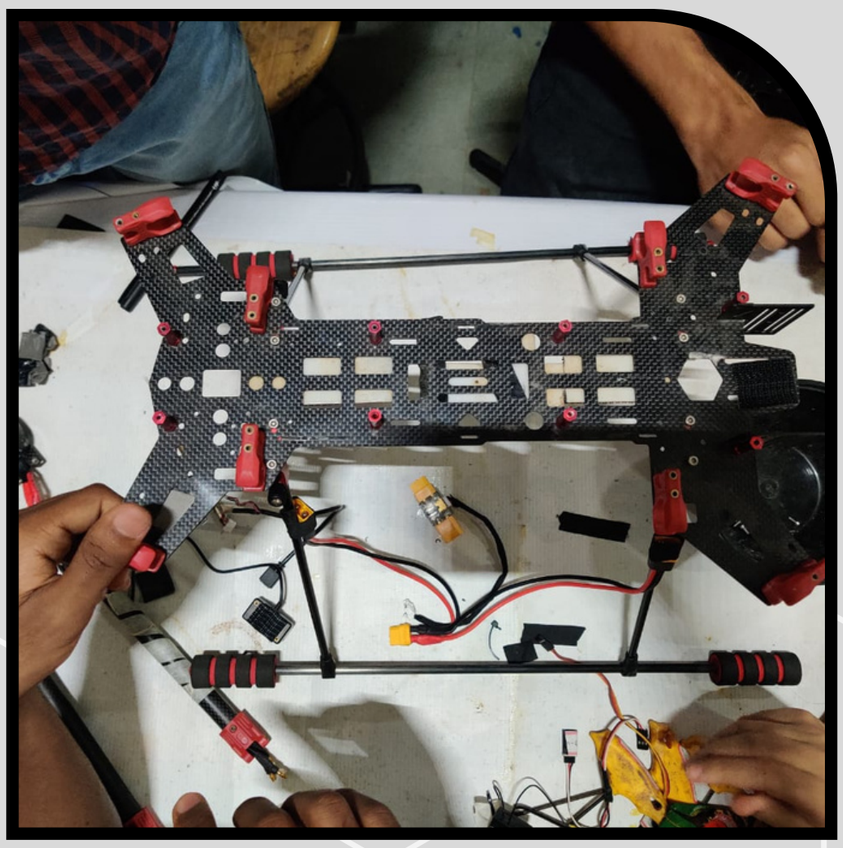
SUAS Website: www.auvsi-suas.org

The Team



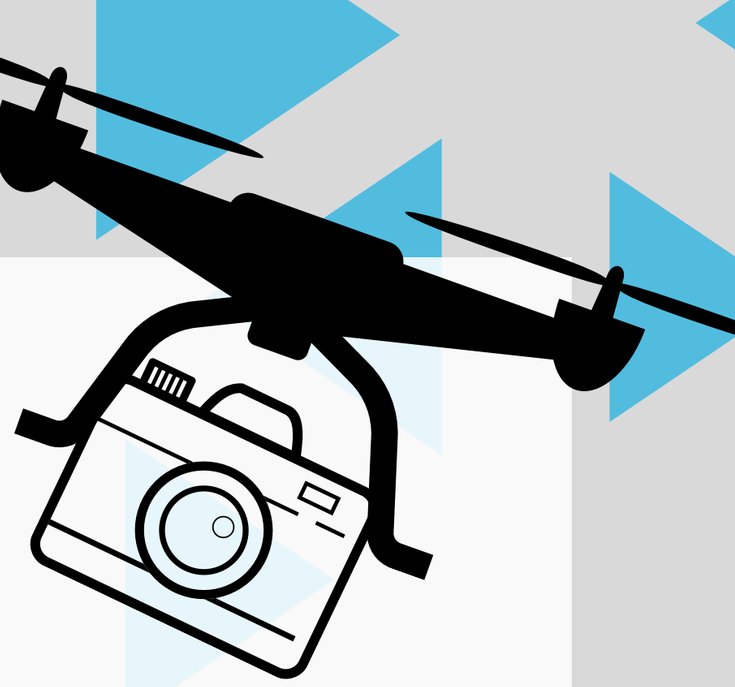
Our integrative approach effectively draws skills from mechanical, electrical, and computer science engineering to develop versatile and economically viable automated systems capable of reconnaissance and civilian applications.

➤ Airframe And Propulsion



The Airframe sub team is responsible for all the **aerodynamic components** of the plane. This sub team designs, builds, and tests a **custom airframe** capable of carrying our **mission payloads.**

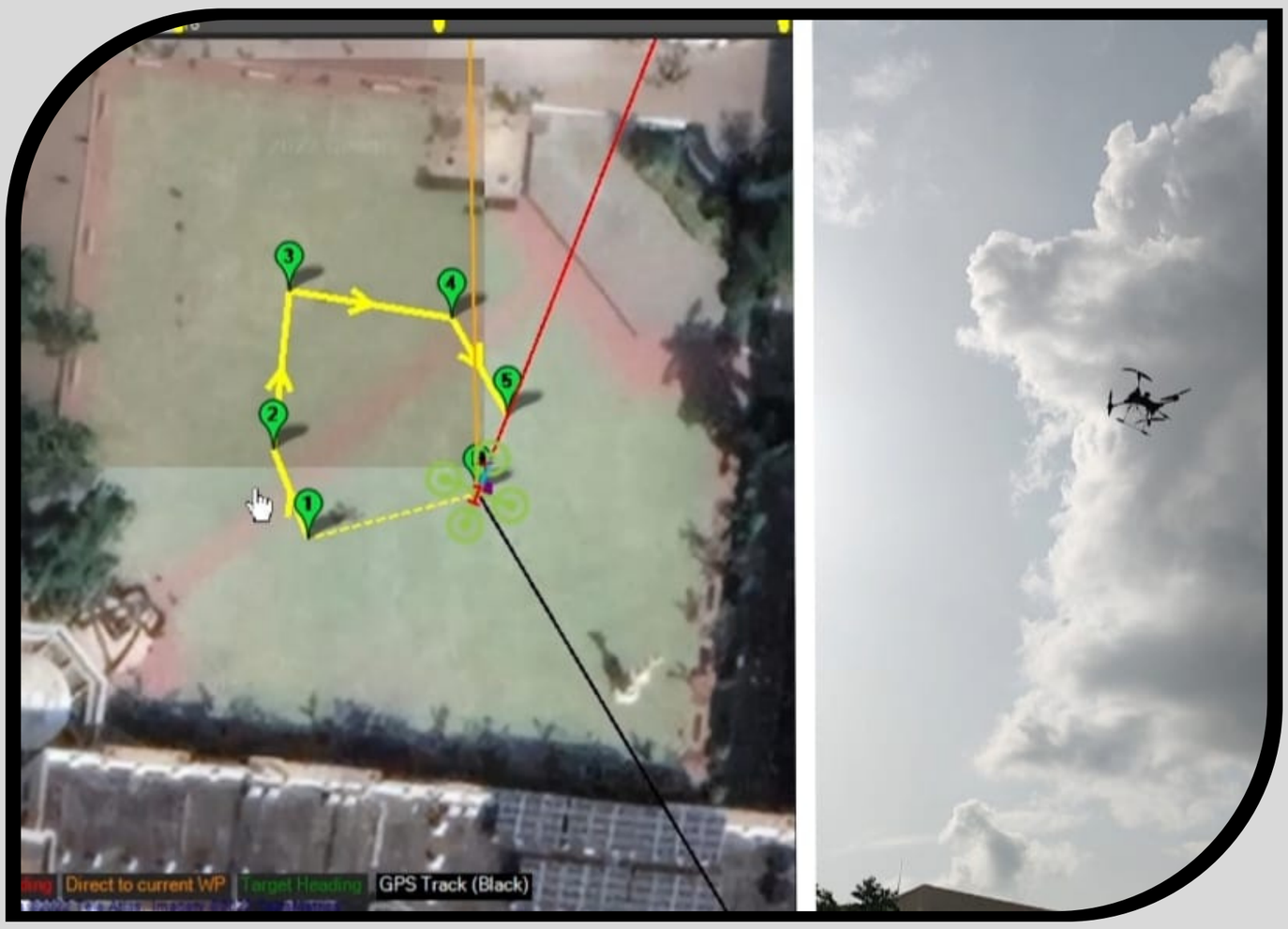
Applying the core principles of mechanical engineering and design, this sub-team iteratively develops the **Unmanned Aerial Vehicle's mechanical systems**, including the Unmanned Ground Vehicle (UGV), and its internal structures.



Imagery And Software

This sub team designs and implements the **software infrastructure** on the plane's onboard computer and the ground server. Our **onboard system** is responsible for controlling all the non-flight critical systems such as the **camera and airdrop systems.**
They are also responsible for the setup of an **interoperability system** for real time wireless communication and for the development of software capable of **real time autonomous detection of targets.** They also carry out the task of testing and developing **algorithms** for **path planning and obstacle avoidance.**

Aviation Electronics And Navigation



This sub team is responsible for ensuring that the aircraft can perform all **necessary maneuvers** to **fulfill the mission requirements.** It involves configuring and **tuning the autopilot** for each of our aircrafts, as well as **implementing software** to aid in autonomous flight planning. This includes our autopilot ground station and path planning algorithms. They also **work with the airframe sub-team** to develop **auxiliary hardware** for the flight control systems and the unmanned ground vehicle.

Our Fleet

Edhitha owns a fleet of 43 drones. Some of them are:

DAWON

- **Useful Payload: 7 kg**
- **Wingspan: 2.6 m**
- **Speed: 120 kmph**
- **Endurance: 150 mins**
- **Propulsion: IC Engine**

AERITECH I-SOAR ONE

- **Useful Payload: 3 kg**
- **Wingspan: 2.5 m**
- **Speed: 55 kmph**
- **Endurance: 30 mins**
- **Propulsion: Electric**

RMRC ANACONDA

- **Useful Payload: 2.6 kg**
- **Wingspan: 2.06 m**
- **Speed: 75 kmph**
- **Endurance: 35 mins**
- **Propulsion: Electric**

ALIEN H4

- **Useful Payload: 1 kg**
- **Quadcopter**
- **Speed: 10 kmph**
- **Endurance: 20 mins**
- **Propulsion: Electric**

SKYWALKER TITAN

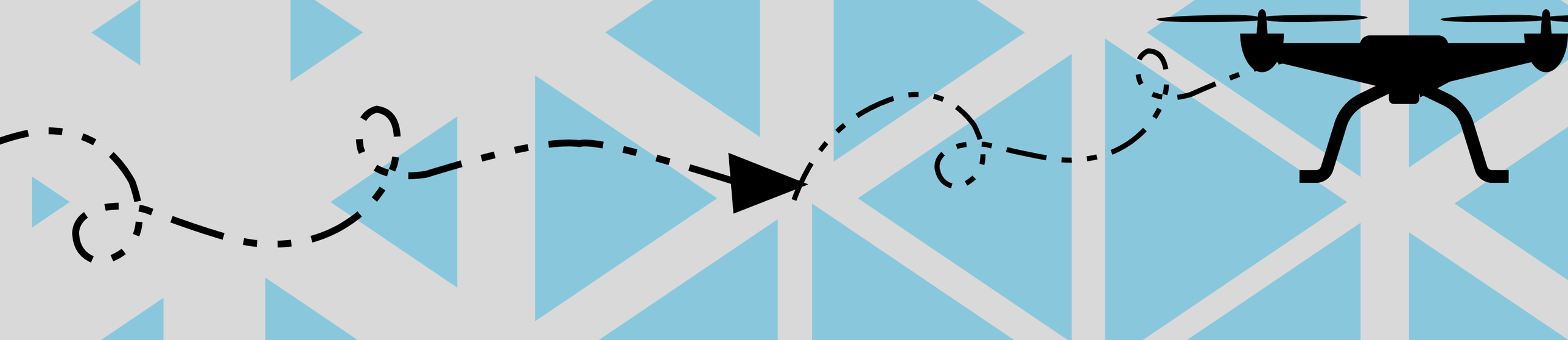
- **Useful Payload: 2.5 kg**
- **Wingspan: 2.1 m**
- **Speed: 70 kmph**
- **Endurance: 30 mins**
- **Propulsion: Electric**

The Competition

AUVSI SUAS competition started in the year 2002 requires students to design, integrate and demonstrate a UAS capable of **autonomous flight, navigation, remote sensing, air delivery, image processing and obstacle avoidance**. The competition is held in June at the Naval Air Station (NAS), Maryland, USA.

Edhitha made its **debut** in the **9th SUAS competition, 2011** and became the **first ever Asian Team** to bag the **winning title** in the year 2015. Despite the lapses during the pandemic era, the team made its grand comeback and bagged the **Dawn Jaeger Tenacity Award** at the 2022 SUAS competition.

Hence, to consistently perform at the highest levels, we rely on external sources to further our success.



Outreach

Seminars and Exhibitions

Edhitha attends a lot of seminars within our university and outside, including the **Bangalore Tech Summit**.

Digital Advertisement

Edhitha has a **prominent social media presence** amidst student and hobbyist circles. Edhitha's Facebook Page has more than 750 followers, the website has several hundreds of monthly viewers and the team’s Instagram Page is growing at a fast pace and gaining steady followers.

Technical Events

• Edhitha attended the **Maker Faire**, Bangalore and the **Living Talents.**

• Edhitha actively participates in the **AUVSI SUAS** competition, attended by **top-notch industry experts** around the world.

• Edhitha also attends the **K-Tech Innovation Expo** from Center of Excellence, attended by **top business** and government officials including the **chief minister of Karnataka**

• Edhitha participated in the **IIC Regional Meet 2022** organized by the MoE and AICTE and exhibited their work in **PRADHARSHANA 2022**, an event attended by **top-notch industrialists** and the like.

Why Contribute?

By joining hands with us, you enjoy the following benefits:

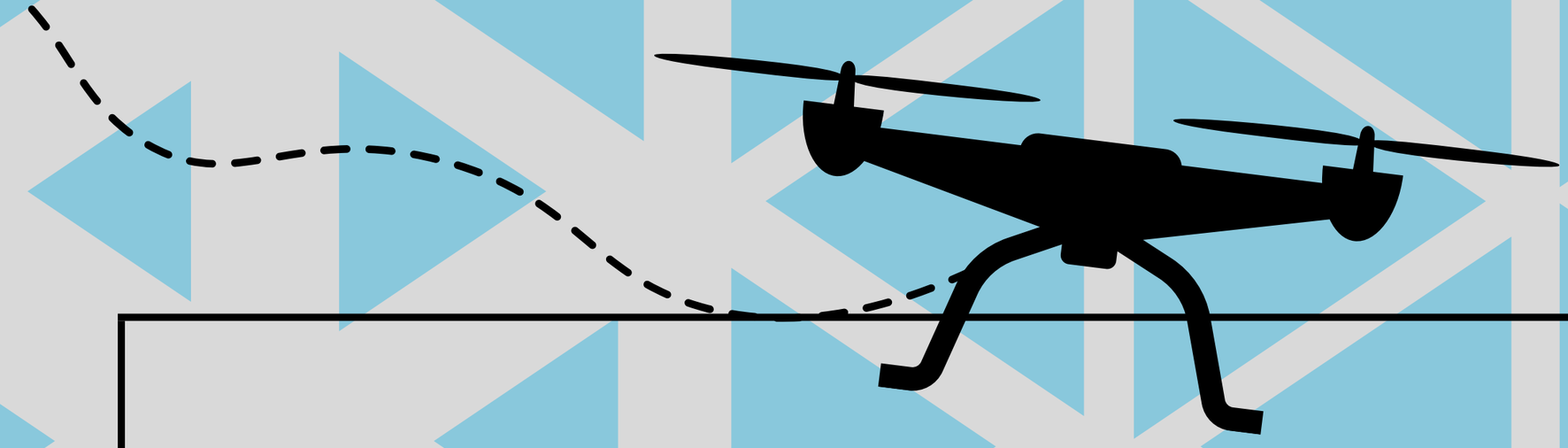
- **Promote your business through Edhitha's Outreach:**

Edhitha has a s**trong presence** in social media platforms - Instagram, Facebook, LinkedIn, in various RC Groups, the college and among other teams participating in the AUVSI SUAS.

SUAS competition sees **sponsorships** from various tech giants like **Google, Lockheed Martin, Boeing** and so on, thus, giving startups and companies various opportunities to **present their products** at an **international stage**. Moreover, the competition sees participation of over 80+ top universities from 20+ countries. The companies have access to this talent pool by supporting a Student Team.

- **Have access to industry grade details:**

With its **10 years of experience** in the field of Autonomous Unmanned Aerial Systems, Edhitha can help spread useful information on the system's engineering aspect of UASs for civilian applications.



- **Promote research and student collaboration:**

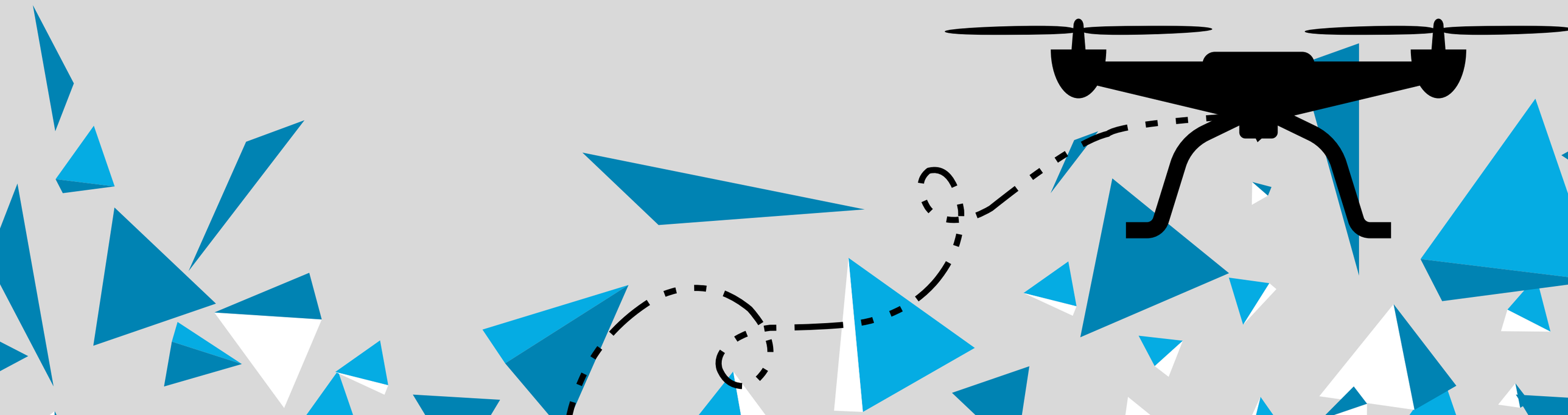
Supporting Edhitha, promotes research in fields related to Unmanned Aerial Systems and promotes inter- disciplinary collaborations. **Some of our publications include:**

Research Papers By Our Team Members

- **D. S., M. M. S. Kumar, S. Jayanth and V. K. Singh**, "Experimental performance evaluation of various path planning algorithms for obstacle avoidance in UAVs," 2019 3rd International conference on Electronics, Communication and Aerospace Technology (ICECA), Coimbatore, India, 2019, pp. 1029-1034.
- **J. Ram**, "Obstacle avoidance algorithm using gradient based Swarm techniques," 2016 International Conference on Robotics: Current Trends and Future Challenges (RCTFC), Thanjavur, 2016, pp. 1-6.
- **S. Murali, Lokesha K., R. George,** "Path Following and Flight Characteristics Evaluation of Trajectory Tracking Algorithms in UAV Navigation," Journal of Mechatronic Systems and Control, Vol. 50, No. 1, pp. 22-27, 2022.

Sponsorship Levels

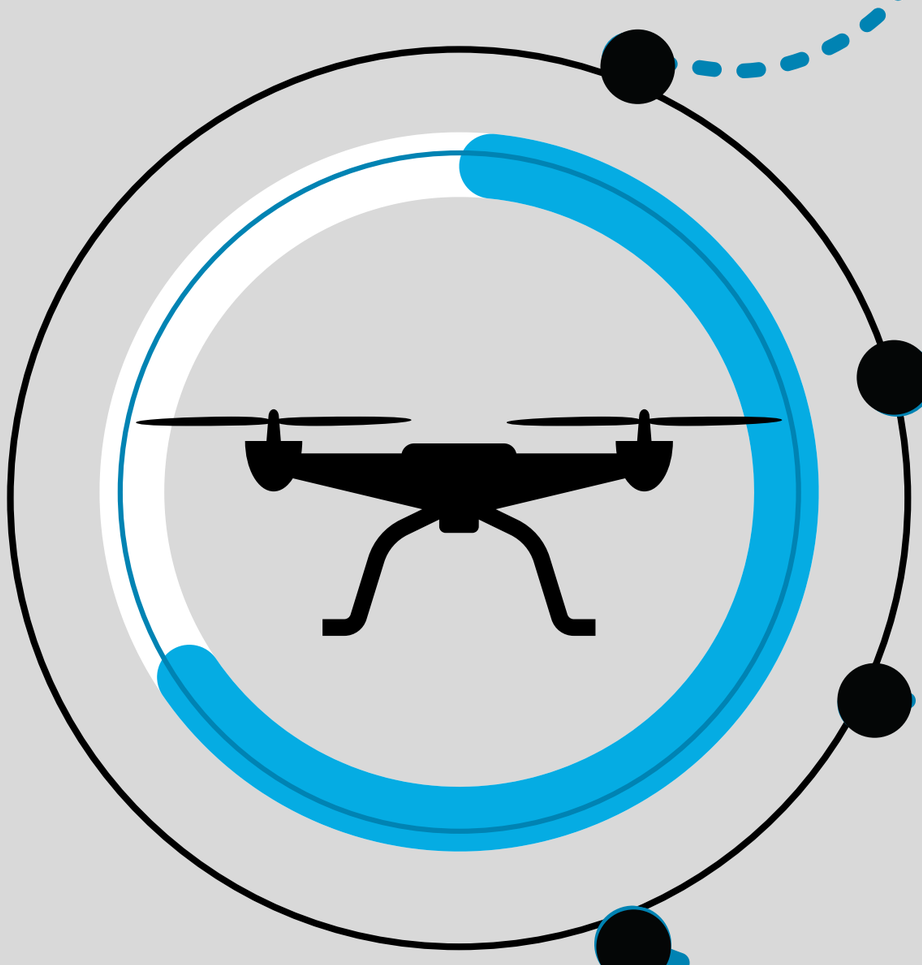
Gold **Upto $500** **(INR 37,500)**	• Promoted as **Equipment Sponsor** • Logo on social media
Platinum **Upto $1000** **(INR 75,000)**	• All benefits of **GOLD** • Promoted as **Technical Sponsor** • Logo on merchandise and website • Logo on the wings of ***ANY ONE UAV*** • Promotion on social media
Diamond **Upto $2000** **(INR 1,50,000)**	• All benefits of **PLATINUM** • Promoted as the year's **Title Sponsor** • Exclusive logo on the wings of ***ALL UAVs in our fleet*** • **Product and service endorsement** at technical events • Exclusive Outreach by **tagging** the company in all our posts & adding the **company link** in our **bio**, for ***ONE SEASON***



Our Sponsors

Edhitha Unmanned Aerial Systems is proudly sponsored by:

T-MOTOR
THE SAFEST PROPULSION SYSTEM



LA QUINTA
INNS & SUITES

RAMAIAH
Institute of Technology

All India Council for Technical Education
AICTE
योगः कर्मसु कौशलम्

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