

**Two Day Workshop on
DRONES AND ITS APPLICATIONS**
Organized by the
**Department of Aerospace Engineering, Karunya Institute of Technology and Sciences,
Coimbatore**
On
19, 20 Oct 2023
In association with
**Aeronautical Society of India (AeSI), Chennai Branch &
Jet Aerospace Aviation Research Centre, Palakkad**

The aim of the two-day workshop is to provide a basic training to the participants on the parts and fabrication of multi copters along with flying practice as well as use of the drone-based images for specific applications like agriculture, remote sensing etc., The workshop covered flying sessions and also sessions on the methods of missions planning and acquiring images for applications.

The workshop is organized in association with the Aeronautical society of India (AeSI), Chennai Branch and jointly supported by Jet Aerospace Aviation research Centre, Palakkad.

No. of participants registered : 31 from 4 different institutions namely Nehru Institute of Technology, Excel college of Engineering, Erode Sengunthar Engineering College and Karunya University.

Events

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- Day 1 :** 9.00 am - 9.30 am - Registration
9.30 am - 10.00 am - Inauguration
10. 00 am - 12. 30 pm - “Introduction to Drones and its applications”
- Ms. R S Krithiga, Director, Jet Aerospace
2.00 pm - 4.00 pm - “Smart Agriculture using Drones”
- Ms. Gayathri, Research Project Associate, Jet Aero
4.00 pm - 5.00 pm - Hands -on flying session
- Day 2 :** 9. 00 am - 12. 30 pm - “Drone based Remote sensing and Mapping”
- Ms. Jia Sarah Thomas, HR Technical, Jet Aerospace
2.00 pm - 3.00 pm - “UAV Intelligence Systems”
- Ms. Archana, Research Project Trainee, Jet Aero
3.00 pm - 4.00 pm - Hands -on flying session
4.00 pm - 4.30 pm - Valedictory function

Inauguration



*Dr. G. Jims John Wessley, HoD - Aerospace, KITS delivering the Welcome address
Sitting from right : Dr. Robinson Smart, Professor, Aerospace, Dr. Madhu Ganesh, Director- Industry
Academia Collaborations, KITS, Dr. P. Rajalakshmi, HoD - Robotics and Automation, KITS,
Ms. R S Krithiga, Director, Jet Aerospace & Ms. Arul Jyothy, Administrative Director, Jet Aerospace*

Session on Introduction to Drones and its applications



Ms. R S Krithiga, Director, Jet Aerospace

Unmanned Aerial Vehicles (UAV) has become a topic of higher importance in recent times and a lot of new upcoming technologies are being researched on it. UAV specifies an aircraft that does not have any human presence. For the under graduate students it is an open opportunity to upskill themselves and enter entrepreneurship as well as research & development sector. The few different parts of UAV include Avionics, Flight Control System, Datalink, Radar, Imaging, Gimbal Control & Camera Systems, Receiver & Transmitter System and GPS Modules. The Unmanned Aerial System (UAS) is a combination of drone, GCS, and transmitter where the data is collected, processed, and transported back to GCS. The different launching procedures are pneumatic catapult, air launch, jet assisted take off, runway launch, VTOL, and hand launch. The different types of UAV include fixed wing UAV, delta wing UAV, hybrid VTOL UAV, Multirotor UAV, hybrid propulsion UAV, helicopter UAV, tilt rotor UAV, ornithopter UAV etc.

UAV & Drones have many sector-based applications like defense, medical, fire & rescue, sports, cinema, photography, industrial inspections, survey, agriculture, forestry etc. The topics covered in the session were UAV, its parts, Different types, UAS System, Different launching procedures, Defence, Medical & Other Applications.

Session on Smart Agriculture using Drone



Ms. Gayathri, Research Project Associate, Jet Aerospace

The Internet of Things (IoT) has provided ways to improve nearly every industry imaginable. In agriculture, IoT has not only provided solutions to often time-consuming and tedious tasks but is totally changing the way we think about agriculture. Smart farming refers to managing farms using modern Information and communication technologies to increase the quantity and quality of products while optimizing the human labour required. Agriculture is one of the major verticals to incorporate both ground-based and aerial drones for crop health assessment, irrigation, crop monitoring, crop spraying, planting, soil and field analysis, and other spheres. Since drones collect multispectral, thermal, and visual imagery while flying, the data they gather provide farmers with insights into a whole array of metrics: plant health indices, plant counting and yield prediction, plant height measurement, canopy cover mapping, field water pond mapping, scouting reports, stockpile measuring, chlorophyll measurement, nitrogen content in wheat, drainage mapping, weed pressure mapping, and so on. Importantly, IoT-based smart farming doesn't only target large-scale farming operations; it can add value to emerging trends in agriculture like organic farming, family farming, including breeding particular cattle and/or growing specific cultures, preservation of particular or high-quality varieties, and enhance highly transparent farming to consumers, society and market consciousness. The topics covered in the session were different types of drones, agriculture-based applications, different camera systems, intelligent flight modes on drone, intelligent UAV technologies, smart monitoring stations, agriculture-based nanosatellite, and agriculture sensors & its specifications.

Session on Drone based Remote sensing and Mapping

Drones can collect data in many different ways, one of the most widespread methods is drone mapping. From real estate, to environmental science to mining, drone mapping has been a game changer and as technology advances, it's becoming useful in more and more fields. It involves mapping an area of your choice with a drone to produce all kinds of useful outputs like an orthomosaic, digital elevation models and 3D models. Drone mapping allows a level of highly detailed data collection across a large area that isn't possible through satellite images or traditional ground surveying. In airborne remote sensing, downward or sideward looking sensors are mounted on an aircraft to obtain images of the earth's surface. An advantage of airborne remote sensing, compared to satellite remote sensing, is the capability of offering very high spatial resolution images (20 cm or less). The disadvantages are low coverage area and high cost per unit area of ground coverage. It is not cost-effective to map a large area using an airborne remote sensing system. Airborne remote sensing missions are often carried

out as one-time operations, whereas earth observation satellites offer the possibility of continuous monitoring of the earth.

The topics covered in the session were techniques for effective drone mapping, benefits of drone surveying, verticals of drone mapping, different drone mapping outputs, categories of drone mapping software, different drones used, GIS & RS overview & its applications.



Ms. Jia Sarah Thomas, HR Technical, Jet Aerospace

Flying Sessions





Session on “UAV Intelligence Systems”

UAV Intelligent systems is an integration of an intelligent feature that makes the drone better & efficient. Stealth technology is where the UAV can hide from radar based on few different principles of infrared, visual or acoustic stealth. Stealth has two major factors that is aircraft design and materials used. The intelligent modes on drone includes point of interest, active track follow me, home lock, course lock, waypoints, return to home, gesture mode and collision avoidance. Few intelligent systems include radar drone detection system, optical communication, counter UAV system, precision drone landing systems, drone swarm technology, drone jamming technology and UAV ground control station.

The topics covered in the session were stealth technology & its types, drone intelligent modes, drone camera systems and drone intelligent systems.



Ms. Archana, Research Project Trainee, Jet Aero

Valedictory Ceremony



Dr. D. Nirmal, Associate Dean - Engineering & Technology addressing the gathering



Distribution of certificates to the participants



Group Picture

List of Participants

Two Day Workshop on Drones and its applications - 19 & 20 Oct 2023					
S.No	Register Number	Name	College Name	Department	AESI No.
AeSI Members					
1	URK20AE1018	GIFTSON MANUVEL RAJ M	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	B.Tech Aerospace Engineering	SM-22749
2	URK21AE1028	RESHITH JOSHUA M			SM-15350
3	URK21AE1040	KRIS JEAN KEVIN G			SM-15319
4	URK21AE1003	DARSHAN			SM-15328
5	URK21AE1018	STAINZ IMMANUEL. S			SM-15280
6	URK21AE1012	AROCKIA NITHISH A			SM-22342
7	URK21AE1049	T . SUNITH DALIN			SM-15339
Non-AeSI Members					
8	721022000000	JACK JEEVA .S	Nehru Institute of Technology Coimbatore	B.E Aeronautical Engineering	Non-AeSI
9	721022000000	HARIPRASATH			Non-AeSI
10	721022000000	SOWNDHARYA.C			Non-AeSI
11	721022000000	SARAN.B			Non-AeSI
12	721022101046	SATHYA R			Non-AeSI
13	721022000000	ABISHAI AATHAVAN P			Non-AeSI
14	721022000000	C.KABILAN			Non-AeSI
15	721022101035	S.PRAVEEN	Non-AeSI		
16	730922000000	JEEVAPRIYA N	Excel Engineering College, Namakkal	B.E Aeronautical Engineering	Non-AeSI
17	730422000000	LYDIAMERCY N	Erode Sengunthar Engineering College Thuduppathi	B.E Robotics & Automation	Non-AeSI

18	URK23AE1037	SOMNATH T	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	B.Tech Aerospace Engineering	Non-AeSI
19	URK23AE1047	SAMIKSHA MAHADEV THARVAL	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	B.Tech Aerospace Engineering	Non-AeSI
20	URK23EC6006	JOEL ABRAHAM	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	Electronics and communication	Non-AeSI
21	URK23EC6017	KOUSHIK GS	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	Electronics and communication	Non-AeSI
22	URK23ME6006	NEHA MARIAM JOHN	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	B.Tech Mechanical Engineering	Non-AeSI
23	URK23BT1016	BENSAM MANUEL S	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	B. Tech Biotechnology	Non-AeSI
24	URK23CS7064	A RIYA	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	Computer science and Engineering	Non-AeSI
25	URK23BT1019	S.JERUSHA JOHNSON	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	B. Tech Biotechnology	Non-AeSI
26	URK23EE1002	SAVIO JOSE	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	EEE	Non-AeSI

27	URK23EC3002	JIBIN E.S	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	Electronics and communication	Non-AeSI
28	URK23EE3003	GIFTO JEESON	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	Electrical and Electronics Engineering	Non-AeSI
29	URK23AE1033	YASVANTH	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	B.Tech Aerospace Engineering	Non-AeSI
30	URK23ME6003	JOHN DANIEL RUUD	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	B.TECH Mechanical Engineering (Specialization in Artificial Intelligence and Machine Learning)	Non-AeSI
31	URK23EC6015	J ARCHANA	Karunya Institute of Technology and Sciences, Karunya Nagar, Coimbatore	Electronics and communication	Non-AeSI
