Most Asked Questions

Lecture date: 23-08-2025

Top 10 Technical Queries

1. Query: What is UAV / UAV's full form?

Answer: UAV stands for Unmanned Aerial Vehicle. It is commonly referred to as a drone, used for applications like aerial imaging, surveying, surveillance, and delivery.

2. Query: How is data from UAV captured and read?

Answer: Data is captured using onboard sensors (e.g., cameras, LiDAR, GPS, IMU). It is then transmitted to a ground control station in real time via radio frequency links or stored locally for post-processing.

3. Query: How does data sharing happen between UAVs and systems?

Answer: Data can be shared via telemetry links, Wi-Fi, or 4G/5G (if equipped with a SIM). For larger datasets, storage devices are retrieved and processed offline.

4. Query: Can you provide an example of use of data collected by drones?

Answer: Drone imagery and LiDAR data are used for precision agriculture (monitoring crop health), urban planning (3D mapping), and disaster management (damage assessment).

5. Query: What is calibration?

Answer: Calibration is the process of adjusting sensors (camera, GPS, IMU, LiDAR) to ensure accurate and reliable data collection.

6. Query: Does data get corrupted when using radio frequency?

Answer: Yes, interference or weak signals can cause data loss. However, error correction protocols and redundancy in communication reduce corruption.

7. Query: How and why is AI implemented in UAVs?

Answer: AI enables UAVs to perform autonomous navigation, object detection, obstacle avoidance, and decision-making in real time without constant human intervention.

8. Query: What are UTC, WGS84, ENU frame, AGL, and MSL?

Answer:

UTC: Coordinated Universal Time (global standard).

WGS84: World Geodetic System 1984 (global GPS reference frame).

ENU: East-North-Up coordinate frame used in navigation.

AGL: Above Ground Level (altitude relative to terrain).

MSL: Mean Sea Level (altitude relative to sea level baseline).

9. Query: What is LiDAR and how is it used?

Answer: LiDAR (Light Detection and Ranging) uses laser pulses to measure distances, creating high-resolution 3D maps. Used in topography, autonomous driving, and infrastructure surveys.

10. Query: How does a UAV communicate with the ground station? Does it need SIM/internet?

Answer: UAVs typically use RF (radio frequency) links such as 2.4 GHz or 5.8 GHz. Some advanced drones use LTE/5G SIM cards for cloud-based transmission, but this depends on the model.

Top 10 Non-Technical Queries

1. Query: Did not get the notes of the previous class.

Answer: Notes and resources are usually shared on LMS or Google Drive after class. Please check the course repository or contact the coordinator if missing.

2. Query: Why is there no "Download" option in recorded classes?

Answer: For security and copyright reasons, recordings are only available for streaming. You can re-watch them anytime on the platform, but downloads are restricted.

3. Query: I just joined — what did I miss and what is the topic for today?

Answer: You can catch up by checking the LMS for slides, notes, and recordings. Today's session topic will also be listed in the course calendar or communicated by the instructor.

4. Query: What is the class schedule/timing?

Answer: Classes follow the timetable shared at the start of the course. Updates or changes are communicated via email/Slack and reflected on LMS.

5. Query: Where can I find additional resources (like API examples mentioned in class)?

Answer: Resource links (e.g., weather API, docs) are usually shared on LMS under the relevant lecture folder or directly in class chat.

6. Query: Are 1:1 doubt-solving or extra sessions available if I miss concepts?

Answer: Yes, you can raise a Helpdesk ticket or reach out to the mentor for 1:1 clarification sessions.

7. Query: How do I protect data (big data) from hackers?

Answer: At a student/project level, focus on using secure APIs, encrypted storage, and access control. Industrial UAV systems implement advanced cybersecurity protocols.

8. Query: Why do we only use East and North (ENU)? Why not South and West?

Answer: By convention, navigation systems define positive directions as East and North. South and West are simply the negative axes in the same system.

9. Query: Are drones equipped with CPU/GPU like computers?

Answer: Yes, modern UAVs have onboard processors and sometimes GPUs (for AI tasks like image recognition). Basic drones may only have microcontrollers.

10. Query: What is the typical range of radio link (2.4/5.8 GHz)?

Answer: Consumer drones typically range from 2–10 km depending on hardware, regulations, and environment. Industrial drones may achieve higher ranges with specialized equipment.