

ITC-EGYPT'2025 COMPETITION



Welcome to the Fifth International Innovation Competition. The competition in its fourth session includes two main directions, which are the general competition and the challenges, and it is open to students, researchers, and graduates.

Competition Tracks:

The First direction, there is general competition for those who see in their projects the ability to challenge and implement and the possibility of transforming that innovation into a marketable model as a product or addition in the field of industry and trade. Through seven main tracks, which are:

1. Robotics.
2. Artificial Intelligent.
3. Medical Sector.
4. Software and Mobile Application.
5. Industry and Mining.
6. Renewable Energy.
7. Smart Agriculture.

Challenges:

The second direction is the direction of challenges through five challenges, each challenge represents a separate competition, one of the challenges is designed and implemented, noting that each challenge has requirements for the contestant to implement as many of those requirements as possible, and the challenges include:

1. Unmanned ground vehicle Challenge

Design and implement an Unmanned Ground Vehicle (UGV) that can autonomously navigate through a maze or obstacle course and transmit real-time images with a minimum of 1 Mbps and real-time audio to a ground station.

The UGV should have a width between 25 and 30 cm and a length between 40 and 50 cm. It must support a maximum communication range of 150 meters and be capable of maneuvering through obstacles, inclines, and slopes of up to 30 degrees.

Key Focus Areas:

- Obstacle Detection.
- Path Planning.
- Balance Between Speed and Accuracy.
- Power Management.
- Lightweight Design.
- Alternative Power Sources.
- Intrusion Detection.
- Stealthy Movement.
- Remote Monitoring.
- Security.

2. Anti-Drone Challenge

Develop a system to detect, track, and neutralize Unmanned Aerial Vehicles (UAVs).

Key Focus Areas:

A- Drone Detection and Tracking Methods:

- Radar Systems.
- AI-Powered Cameras.
- Thermal Imaging.
- Acoustic Sensors.
- Radio Frequency (RF) Detection.

B- Countermeasure Techniques:

- RF Jamming.
- GPS Spoofing.
- Drone Interception.
- Directed Energy Weapons.

3. Water harvesting from Air Challenge

Design and implement a system that extracts the maximum possible amount of water per day from the air using sustainable methods.

Key Focus Areas:

A- Water Collection Mechanisms:

- Condensation.
- Desiccants.
- Fog Harvesting.

B-Waste and Energy Management:

- Waste Management.
- Contamination Prevention.
- Renewable Energy.

4. Omni - directional Antennas Challenge

Design and implement omni - directional antennas with optimal gain, and impedance matching for communication applications operating in the (400-500) MHz frequency range.

5. Helical Antenna Challenge

Design a helical antenna with optimal gain, directivity, and impedance matching for communication applications operating in the (1.1-1.7) GHz frequency range.

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