30th Workshop on Space Technology for Socio-Economic Benefits: "Challenges and Capacity-building Opportunities for Emerging Space Nations"

BlincSat as Space Engineering Educational Program

Empowering the Future through space tech
About Us

VISION
Inspire the next space innovators, enthusiasts and scientists, by providing an accessible educational experience in space technology.

MISSION
Democratize space education and technology by developing cutting-edge cubesat simulator programs for hands-on learning experience, enabling diverse communities to become contributors to the evolving landscape of space technology.

Values
Accessibility, collaboration, innovation

Purpose
Contribute to solving challenges in the Middle East and around the world through space technologies.

Raghad Maraqa
Mechanical Engineer, Frame and structure design

Diana Aljbour
Aeronautical Engineer, system engineering and architecture, Ground segment

Kaliyah Harris

Sofia Hill

Mohammad Refaii
Physicist, electronics and embedded systems, circuit designer

Montaser Sallam
Senior satellite and avionics engineer

Project mentor
Animals among 59 species were killed in Jordan

The Royal Society of conservation of nature (RSCN)

Is Mandated to enforce regulations related to protecting wildlife

Tracking Hunters is Challenging

AS the majority of endangered wildlife is distributed in out-of-network coverage.

4,707
Mission Objective

• IoT D2S node connections with reserves in Out of Coverage areas

• Lower Powered: using Low Power Long Range - LORA -

• Feasible alternative for building Expensive traditional network infrastructure
Case Study : Jane Goodall

For decades, satellites have measured dramatic changes in the world’s forests. These eyes in the sky provide timely information on environmental change and human activity in forests, especially in remote ones. The Jane Goodall Institute has been working with NASA and using Earth science satellite imagery and data in its chimpanzee and forest conservation efforts in Africa, particularly the Gombe region.

The observations and analyses from above aid Goodall’s TACARE program -- a community-led approach to conserving the environment while improving and enriching the lives of people who live nearby. Such efforts are crucial to protecting the planet’s biodiversity and achieving sustainable human development of the landscape. Learn more in this video.
Educational Objective

• Local designed and operated program, utilizing educational Kits of cubesat simulator

• Accessibility for Hands-on education

• Create Opportunities in Space Industry
“Don't wait for the right opportunity, create it!”
Student-Led Project for Students!

- Low-Cost, low power and realistic Simulator
- COTS Component
- Open Source
Physical Architecture
Do you know what helps you make your point crystal clear? Lists like this one:

- They're simple
- You can organize your ideas clearly
- You'll never forget to buy milk!

And the most important thing: the audience won't miss the point of your presentation.
Simulation

- Mission Scenario Simulated Using STK
- Calculations for coverage areas and CubeSat periods in orbit
- Power Budgeting
- Orbit (LEO)
Frame Design

- Easy assembly
- 10*10 cm 1U Cube
- 3D printed (PLA)
Electronics Prototype CubeSat

- COTS Components
- Boards: OBC, EPS boards
- MCU: STM32F103
- LoRa
- RTC, GPS, 9DOF IMU Sensors
- LI-ION, power monitoring circuit
Electronics Prototype: Node

• Ultra Power saving (sleep mode, regular mode)

• Animal Tracking, Animal Health monitoring (heart pulse), temperature

• Solar powered

• Could be scaled to other applications, custom-designed
Ground Segment

- Registered to Tiny GS open-source Lora community Ground stations tracking Lora Satellites
- Lora Ground Station ESP, Lora and 433 Mhz Antenna
- First Jordanian Lora Ground Station registered in Tiny GS
Challenges

- Absence of space agency/programs
- Space science not offered in formal university/school education
- Lack of funds

- Legalities
- Facilities/materials
- On-Site mentorship
Next Steps

Team members recruitment and project mentors
- Scale up the team and create access for the opportunity for talented and passionate people

Outreach Event
- Satellite Building Workshops and outreach activities

Build Collaboration
- International and National level
- Talent exchange/ project-based internship
- Secure Funding
- Kits/ Simulator production
- Facilities (university, research labs, testing facilities)

Finalize and test MVP of our educational kit
- MVP testing with partners, animal reserves, educational institutions

Kits production
- Custom-designed PCB boards
- Costume frame,
- electronics and radio modules, flexible nodes to be used for different applications/payload

Work on launchable CubeSat opportunity
- If we got the right support we would love to see the idea launching to orbit!!
Current collaborators
Connect with us and Support our mission of launching Educational CubeSat program in Jordan!

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