



UNISEC-EGYPT:

Toward First Egyptian University Satellite CU-SAT

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Outline

- **UNISEC-EGYPT and SSTLab.**
- **2016 UNISEC-EGYPT activities.**
- **International collaboration.**
- **Future Plan.**

UNISEC-EGYPT and SSTLab



- STTLab is the host of All Unisec-Egypt activities in Cairo Univ.
- A student managed lab with minimum faculty interference.
- Old students are responsible for training and dissemination of knowledge to new students under the supervision of Aerospace department professors.
- Both students (old and new) groups are working together to participate in national and international competitions.

Space Systems Technology Laboratory SSTLab



Six technical groups

CTPx

New Lab
members

Ground
station

Cubesat

Quad/Octo
copters

Space
rover

Launchers

Two non-technical groups

Public
relation

Fund raising

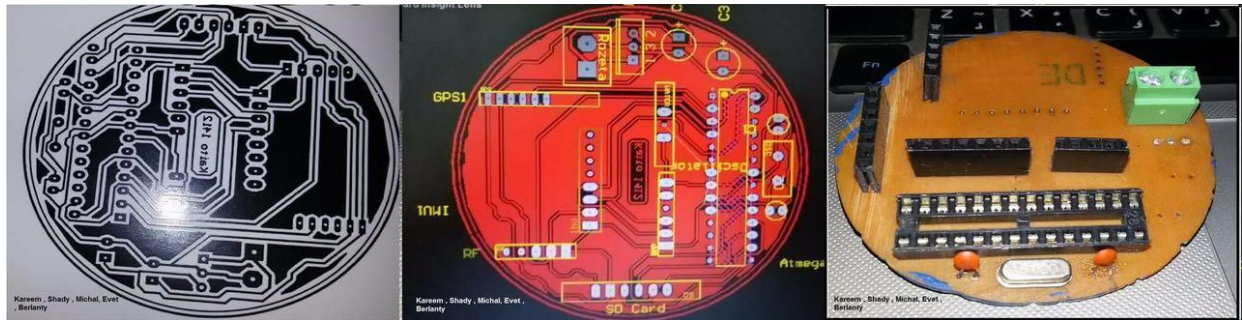


2016 UNISEC-EGYPT activities

- CanSat training program (CTP6).
- Quadcopter Group.
- Rover Group.
- Hyperloop Competition.
- Cube Sat Group.

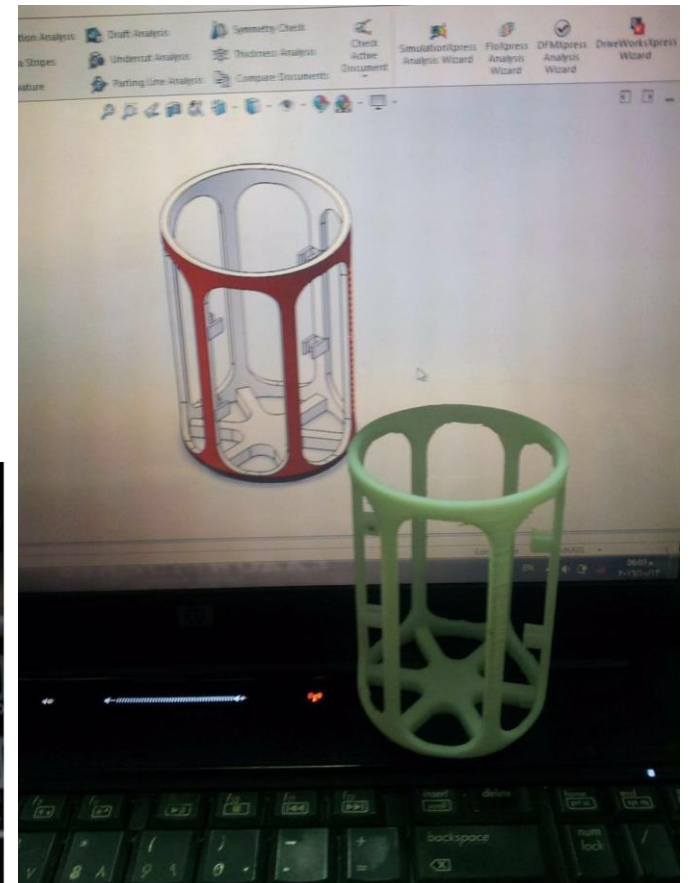
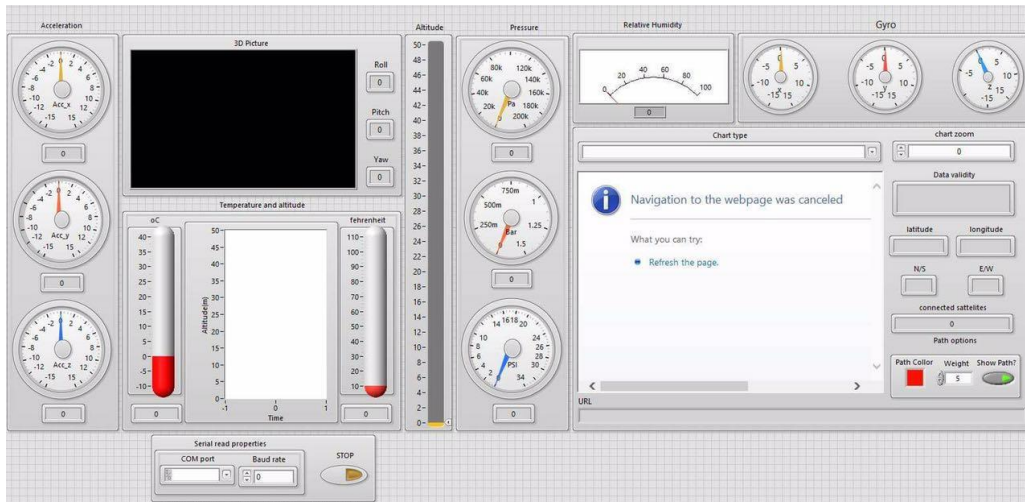
CanSat training (CTP6)

- The content taught to trainees have been improved.
- Starting from the basic concepts about satellites to design, fabricate, test and launch a fully designed module of CanSat..



CanSat training (CTP6)

- 20 students have been trained this year from Cairo and Alexandria universities: AE , EE , and CS departments



MSA University first CANSAT training

We are responsible for training other members of UNISEC-EGYPT to start their own can sat program.



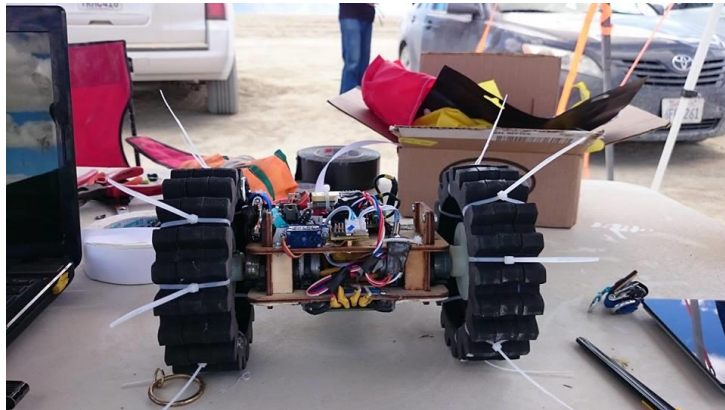
QUADCOPTER GROUP

- Attitude control have been improved.
- Working on the position control.
- Got EED prize for best mechanical system for the second time (2013 and 2016)



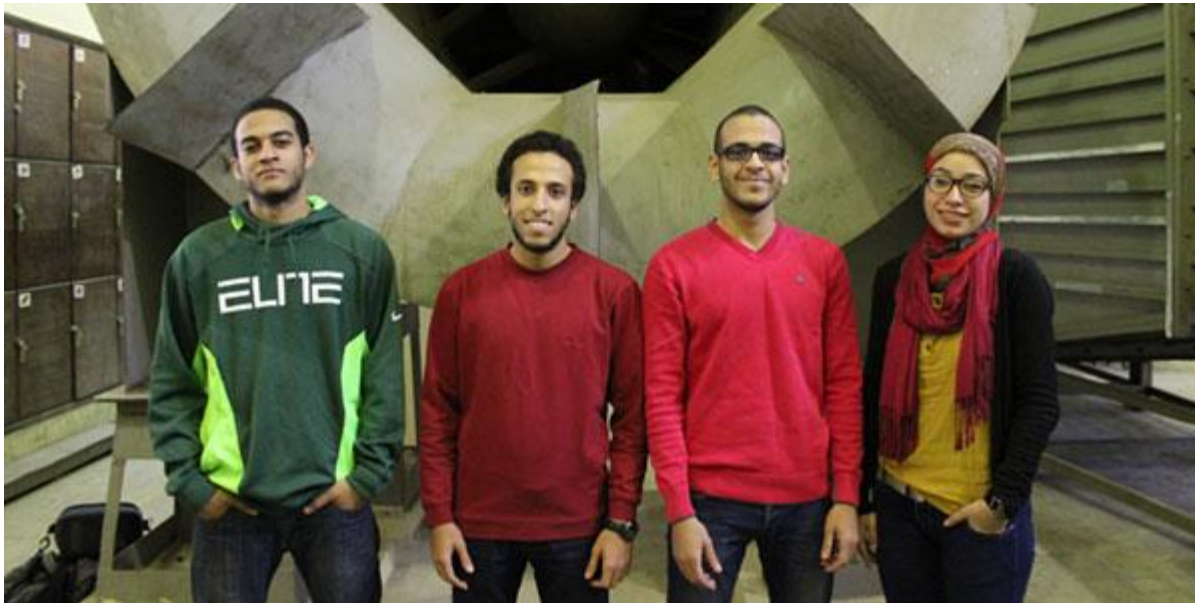
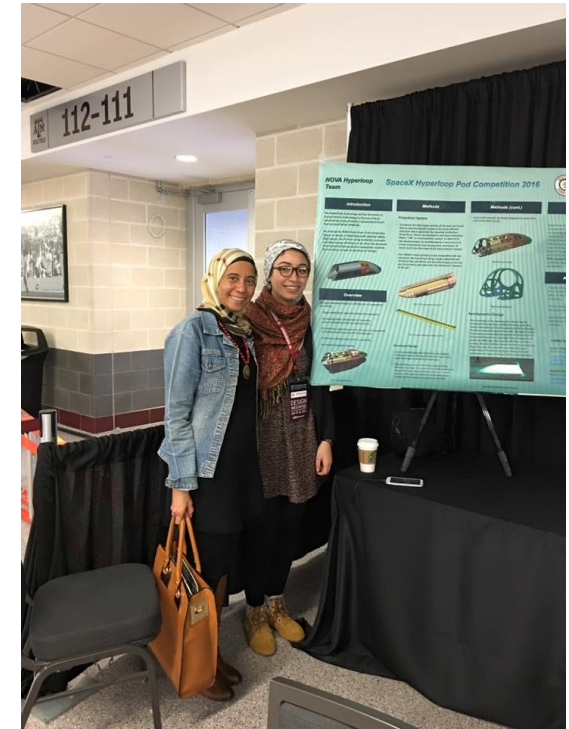
Rover Group

- The rover back program have been renovated with extensive changes in the three main sub-systems: mechanical, recovery and control.
- Third time ARLISS participation (2014, 2015, and,2016)
- Got 7th place between 16 teams.



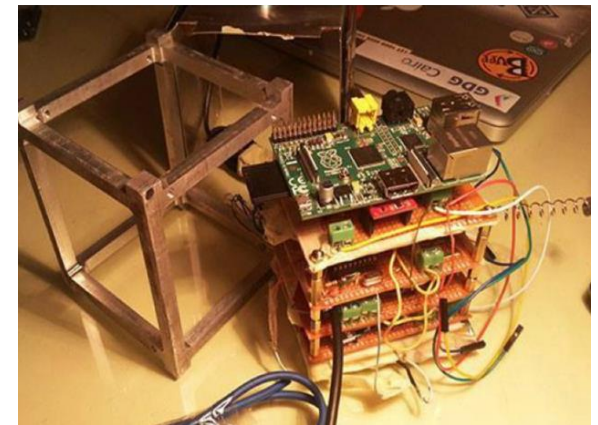
Nova Hyperloop Team

- Four students team from AE department compete with a design.
- Got Design Concept Innovation Award.

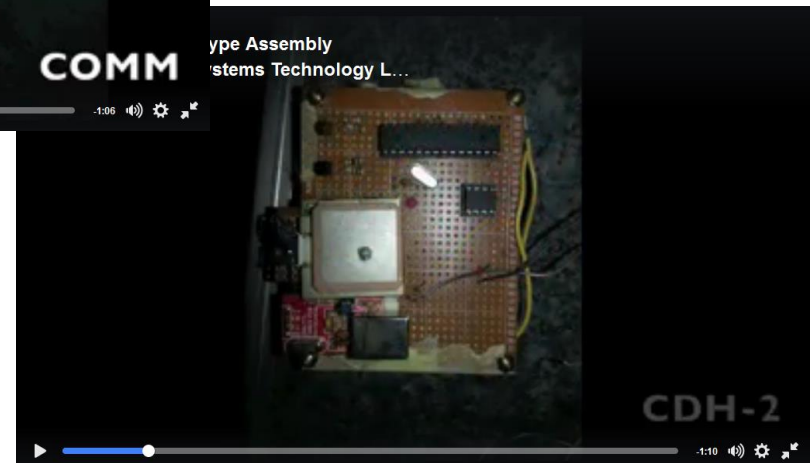
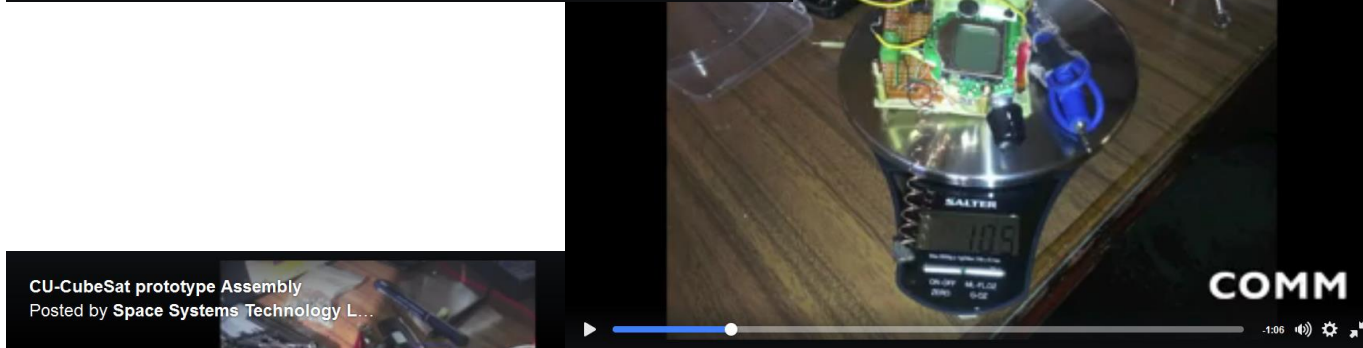
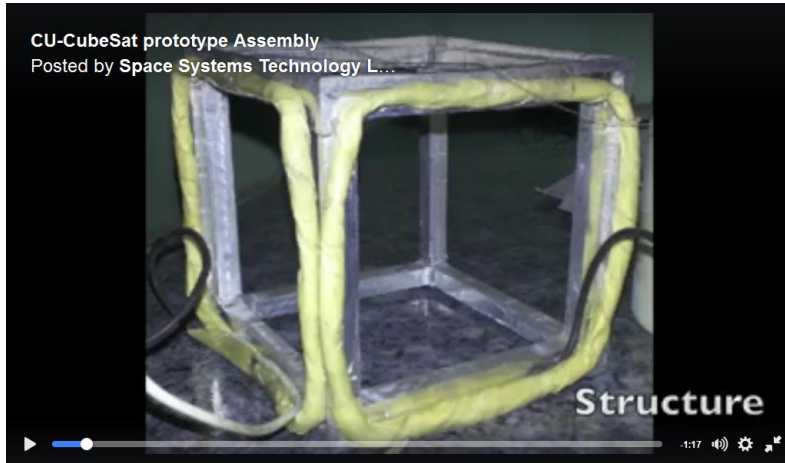


CUBE SAT GROUP

- The main objective of this group is to prepare students for CU-SAT.
- We had a very ambitious team want to work on 3U Cube Sat.
- Discovered that Cube sat is too much for **Extracurricular activity.**
- They settled for a design paper for AIAA conference.
- We will have our forth iteration for cuebsat as a graduation project.



CUBE SAT GROUP



Proposals for space Collaboration

We have been approached by three countries with requests for collaboration on the university level:

- South Africa
- Ukraine
- Russia

Proposal for Cooperation between Cairo University, Department of Aerospace Engineering, and National Aerospace Center NAC South Africa In the area of Aerospace Technology

1-Cooperation to Develop Attitude Control Algorithms for small satellites potentially planned in either countries, Egypt and SA.

2-Cooperate to Design, Build and Test three generic small satellite subsystems, namely: 1) Power system, 2)Attitude determination and control and 3) Optical Payload Subsystem.

3- Cooperation for a joint satellite projects for Africa: AFRICA-SAT.

Proposal for Cooperation between Cairo University, Department of Aerospace Engineering, and National Technical University of Ukraine "Kyiv Polytechnic"

- They offer cooperation in satellites technology transfer .
- We have previous experience working with the Ukraine in Egyptsat1
- We suggested their cooperation in building and launching our CU-SAT.
- We have initial acceptance from their side .
- For not apparent reason connections were stopped.

Signing a Cooperation agreement between Cairo University and Peoples' friendship university of Russia



Cooperation agreement was signed on may 26-2015 with the following main items:

- Cooperation in the development of a set of small satellites and joint scientific research in the field of design and construction of small satellites.
- Development of a comprehensive space education project for disseminating space knowledge to Cairo university students and other interested Egyptian organizations.

Signing a Cooperation agreement between Cairo University and Peoples' friendship university of Russia



- We finalized the working plan in 29th of October 2015 in Russia.
- In October 31st there was the catastrophe of the Russian plan over Sinai.
- Everything stops since then!!



Peoples' friendship university

Future Plan

- Continue with our educational programs and improve it.
- Consolidate a collaboration agreement with experienced space identity for CU-Sat.
- Working around the very dynamic situation in Egypt (political issues, fast change in Egyptian currency value, the availability of foreign currency, etc.)

Thank you

Ready for Questions

