UNISON-Egypt

A Further Step toward Space Education and Understanding

Ahmed Abd El-Moniem

Senior Student at Aerospace Engineering Department, Cairo University

UNISON Egypt - SSTLab

- Space Systems Technology Laboratory (SSTLab) is a student based organization at Aerospace Engineering Department, Cairo University, which was established in August 2011. SSTLab has become the main contact point of UNISON Egypt.

- UNISON Egypt includes laboratories from different universities: Cairo, Alexandria , MSA and Zewail.

UNISON Egypt Activities 2016

- UNISON Egypt has supported many projects:

  - CanSat Training Program (CTP)
  - Rover Back
  - Quad Copter
  - Cube Satellite Systems

CanSat Training Program (CTP)

- SSTLab continues the CTP series which started in 2010, by organizing CTP6 in Cairo university venue.

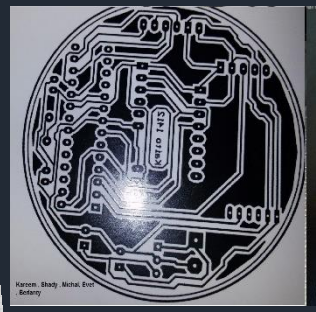
CanSat Training Program (CTP6)

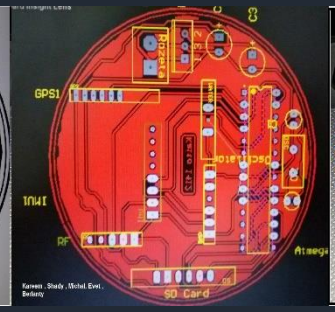
- SSTLab has successfully trained 20 students this year from Cairo and Alexandria universities. The training was held in mid-year vacation, from January 31, 2016 to February 11, 2016.

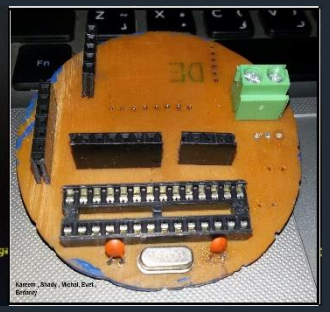
- UNISON Egypt has organized a national competition among trainees and nominates the winner to participate the following ARLISS CanSat competition.

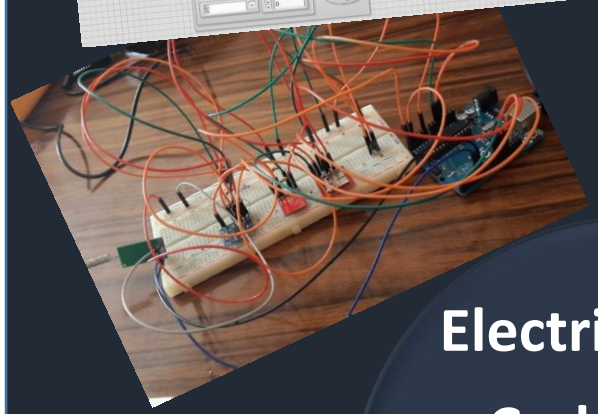
MSA CanSat Training Program (MSAT)

- UNISON Egypt Chapter in MSA university has started it's CanSat training this year by training 40 students.









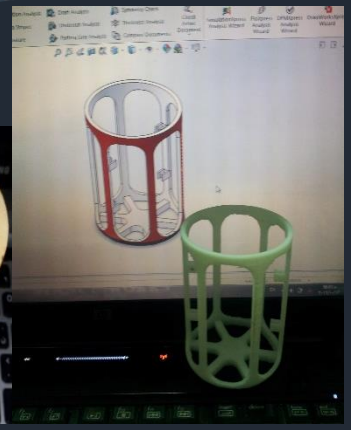
Electrical

- Code
- PCB
- Ground Station

CanSat Subsystem

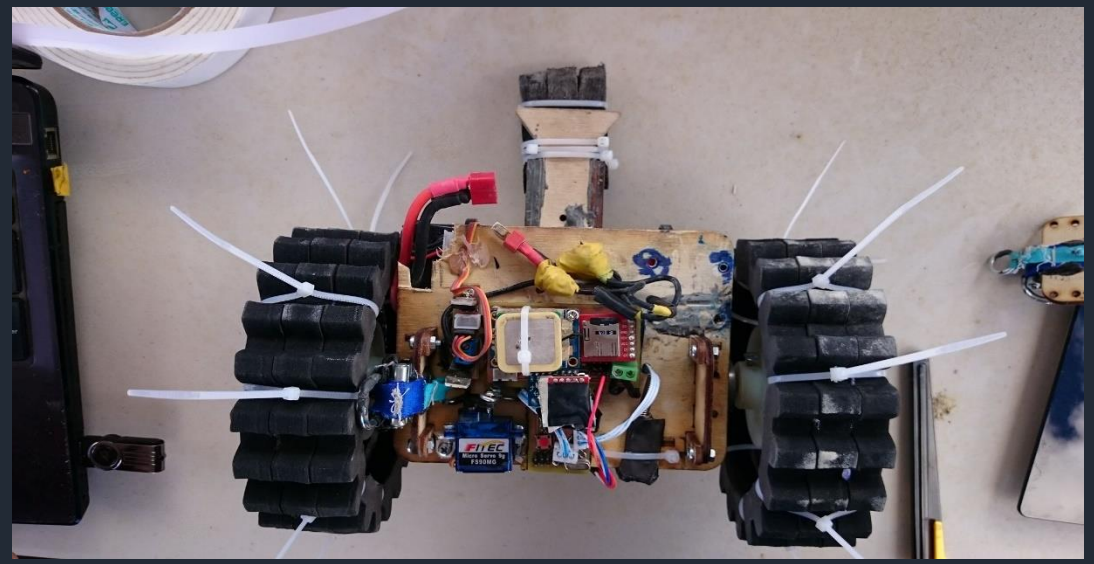
Mechanical

- Recovery System
- Structure



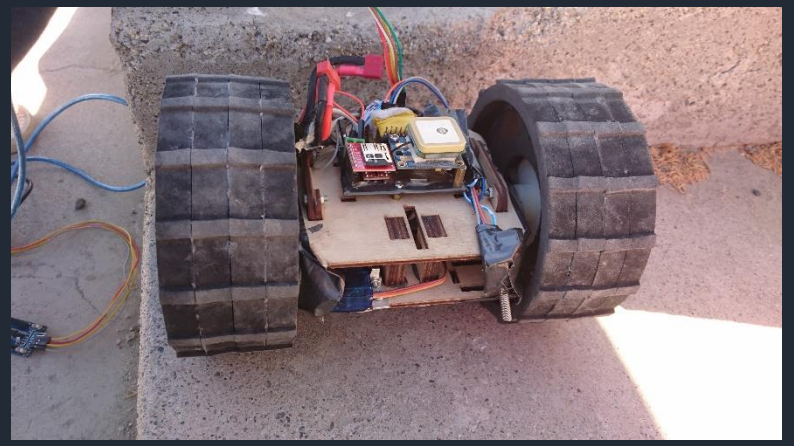
Rover Back

- SSTLab starts again the rover back full program after last two years of participation in ARLISS competition years (2014 and 2015).
- The Lab holds “Rover Back” training program including three major sub-teams: mechanical, recovery and control (electronics) teams.



Rover Back

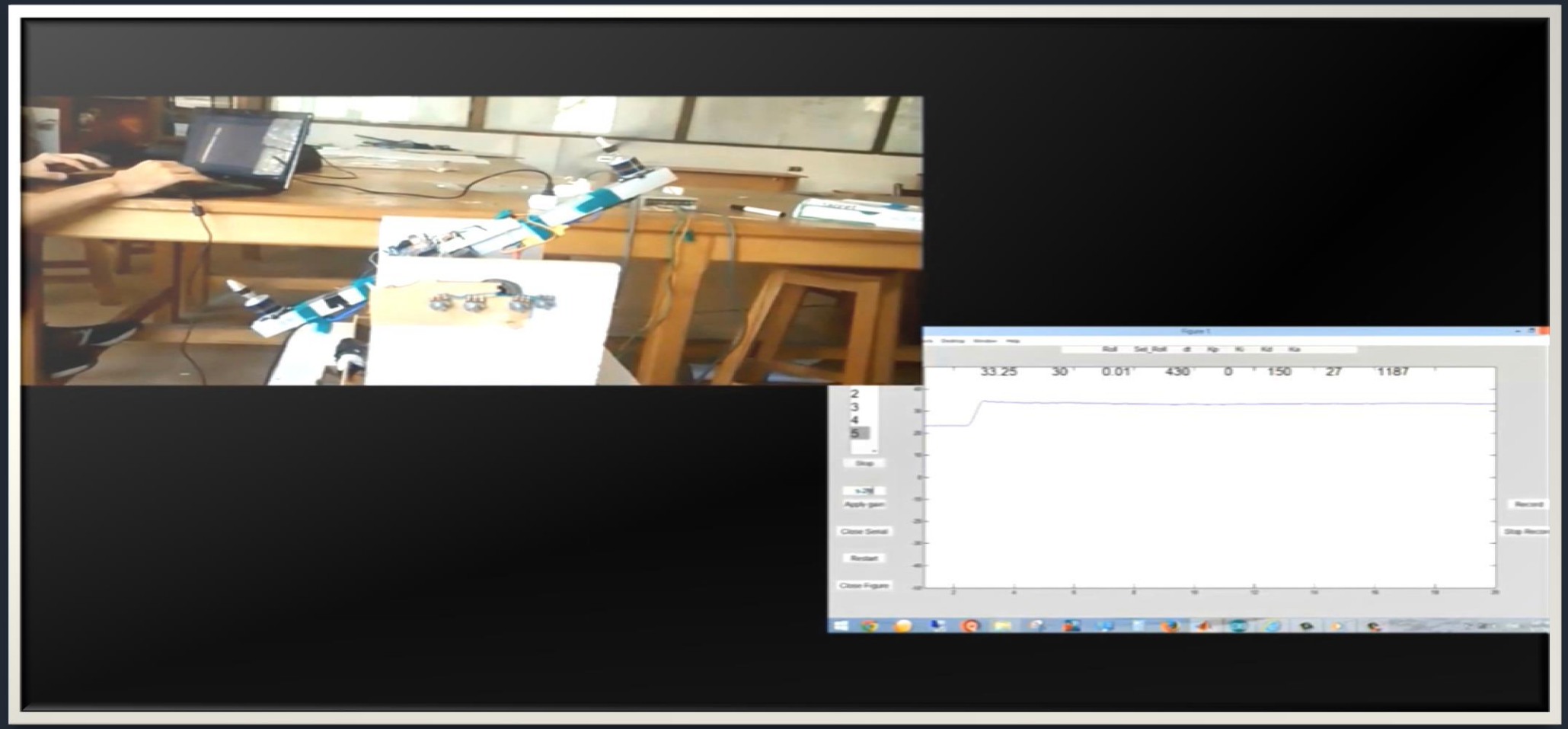
- SSTL Rover Back participated ARLISS competition 2016, held from 11 to 16 September and came in 7th place. Adding some improved subsystems such as Dual Deployment recovery mechanism and a mode of complex control action which works when the rover stuck in sand.



Quad-Copter

- SSTLab's targets of quad-copter for this year are
  - Attitude and altitude control.
  - Achieving good performance in position control that enables us to use in several applications.
  - Getting suitable identification for the model using system identification.

Quad Copter



Quad Copter

- SSTLab Quad-Copter won the “The Best mechanical Engineering Project” in Egyptian Engineering Day (EED), September 2016.

- Future Work
  - Trajectory generation.
  - Obstacle avoidance.
  - Tracking of objects.
  - High altitude flight.

Cube Satellite Systems

- CubeSat project which started with the first early prototype in 2008, followed by the second one in 2013 and third one in 2014. Last year a group of undergraduate students started the forth development cycle.

- This year they are working on the Laser communication and ADC subsystems as a graduation project.

Future of UNISON- Egypt

- Making much of students' actions and creative ideas unbounded by traditional ones, which will lead to breakthrough in space technology.
- Continuing in space applications and projects like CanSat, CubeSat, Rover, Quad-copter and Rocket to get the "Know-how" knowledge and practical experience in space technology.
- Starting to develop a true space product and try to launch it in space like our University-Sat 1.
- Enhancing UNISON – Egypt to include more Egyptian universities.

Thank You

Contact:
ahmed_abd_el_moniem@yahoo.com