



# UNISEC-EGYPT:

## Space Education and Research

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# Outline

- **UNISEC-EGYPT and Space Systems Technology Laboratory (SSTLab) previous activities.**
- **The Egyptian space Agency.**
- **UNISEC-EGYPT 2017 Training activities.**
- **UNISEC-EGYPT 2017 Research activities.**
- **Future Plan.**

# Previous Activities

- SSTLab (2011) is the host of All Unisec-Egypt activities in Cairo
- We have been working on :

**CTPx**



**Ground station**



**Cubesat**



**Quad/Octo copters**



**Space rover**



# Egypt Approves Establishing Egyptian Space Agency

- There was a governmental debate about the need for a space agency since 2015.
- The Council of Ministers has approved on Wednesday (SEPTEMBER 27, 2017) establishing a space agency aimed at space scientific research following years of preparation.
- The new law has been referred to the parliament for final agreement in hopes to expose Egypt to the world community of space technology.
- Aerospace Department, Cairo University will be the main source for Engineers and researchers in the new agency (We have to prepare for that).

# UNISEC-EGYPT 2017 Training Activities

- Professors Training.
- CanSat Training Program (CTP7).
- Rover Training Program (RTP1).
- Seminars.



# Professors Training

We have two “Space” active professors in AE department

Prof. Ayman Kassem



Prof. Mohamed Khalil



CLTP8 (Hepta-sat) 9/2017



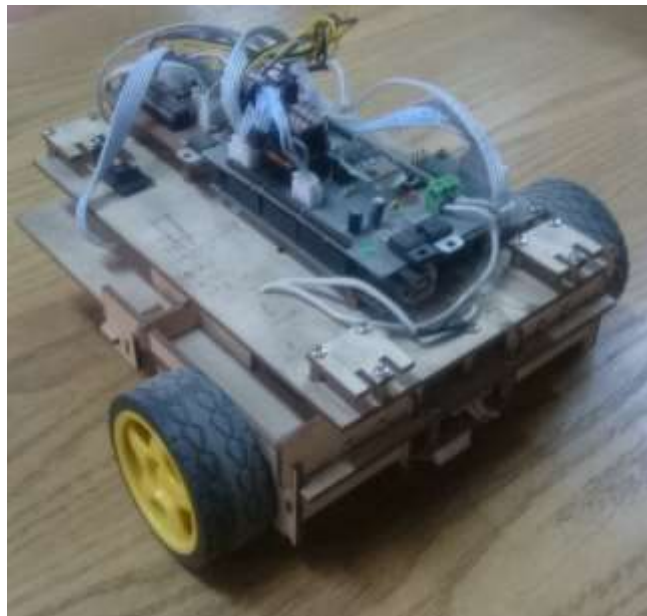
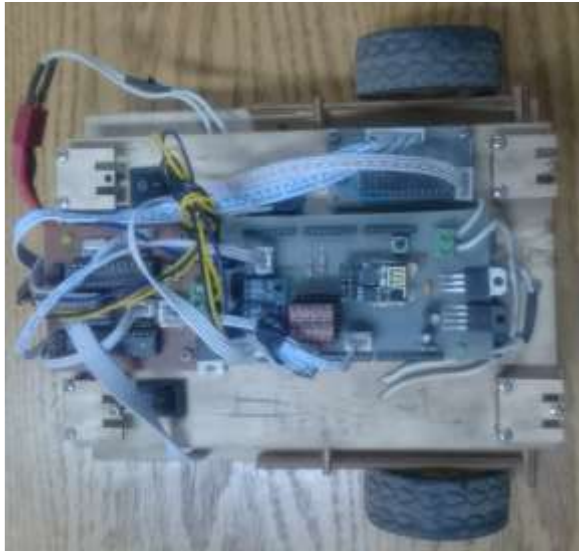
One year at Nihon University

# CanSat Training (CTP7)

- 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.



# Rover Training Program (RTP1)





# Seminars

- Introduction to satellites.



# Seminars

- Introduction to Hepta-Sat.

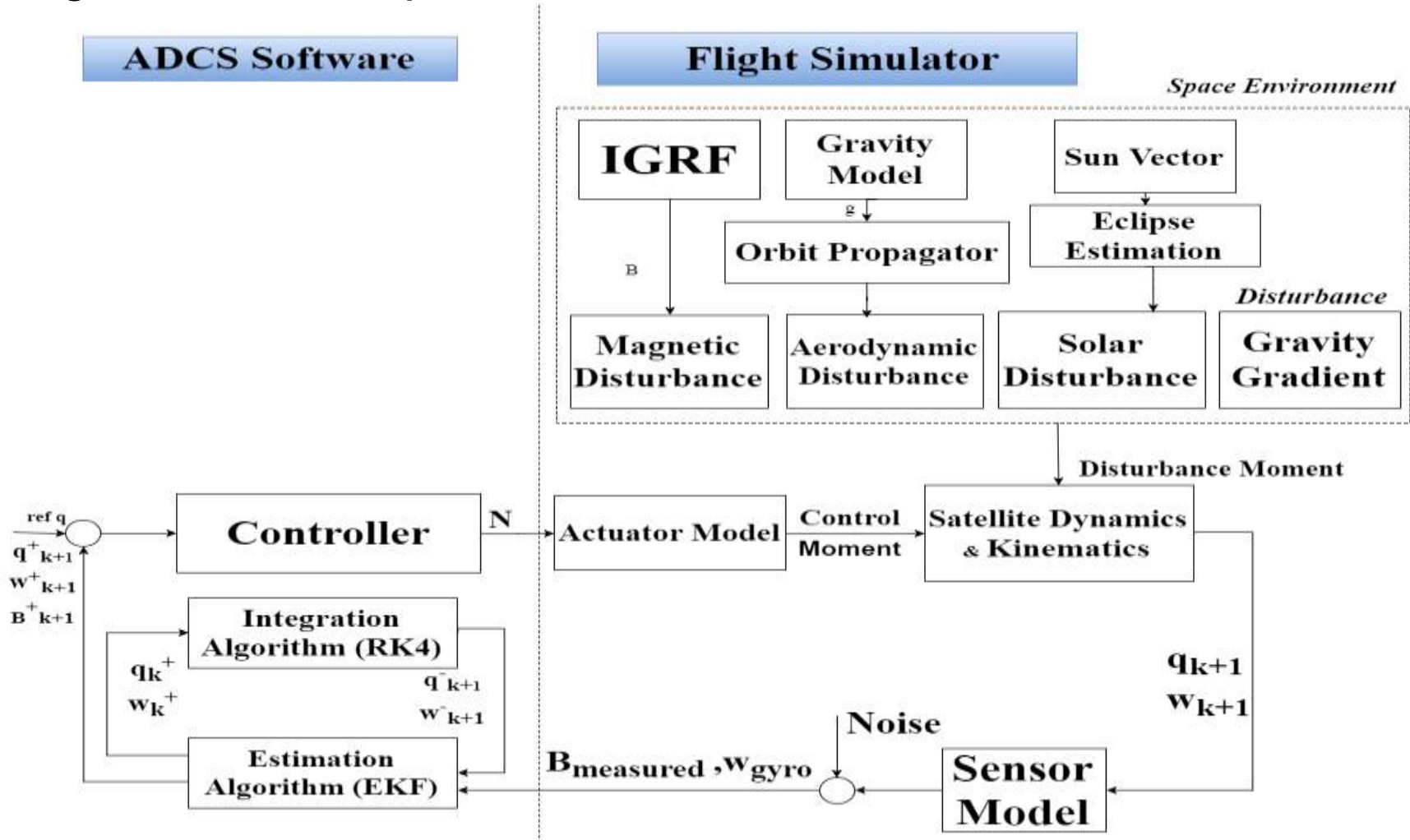


# UNISEC-EGYPT 2017 Research Activities

- Graduation Projects.
- Master Theses.

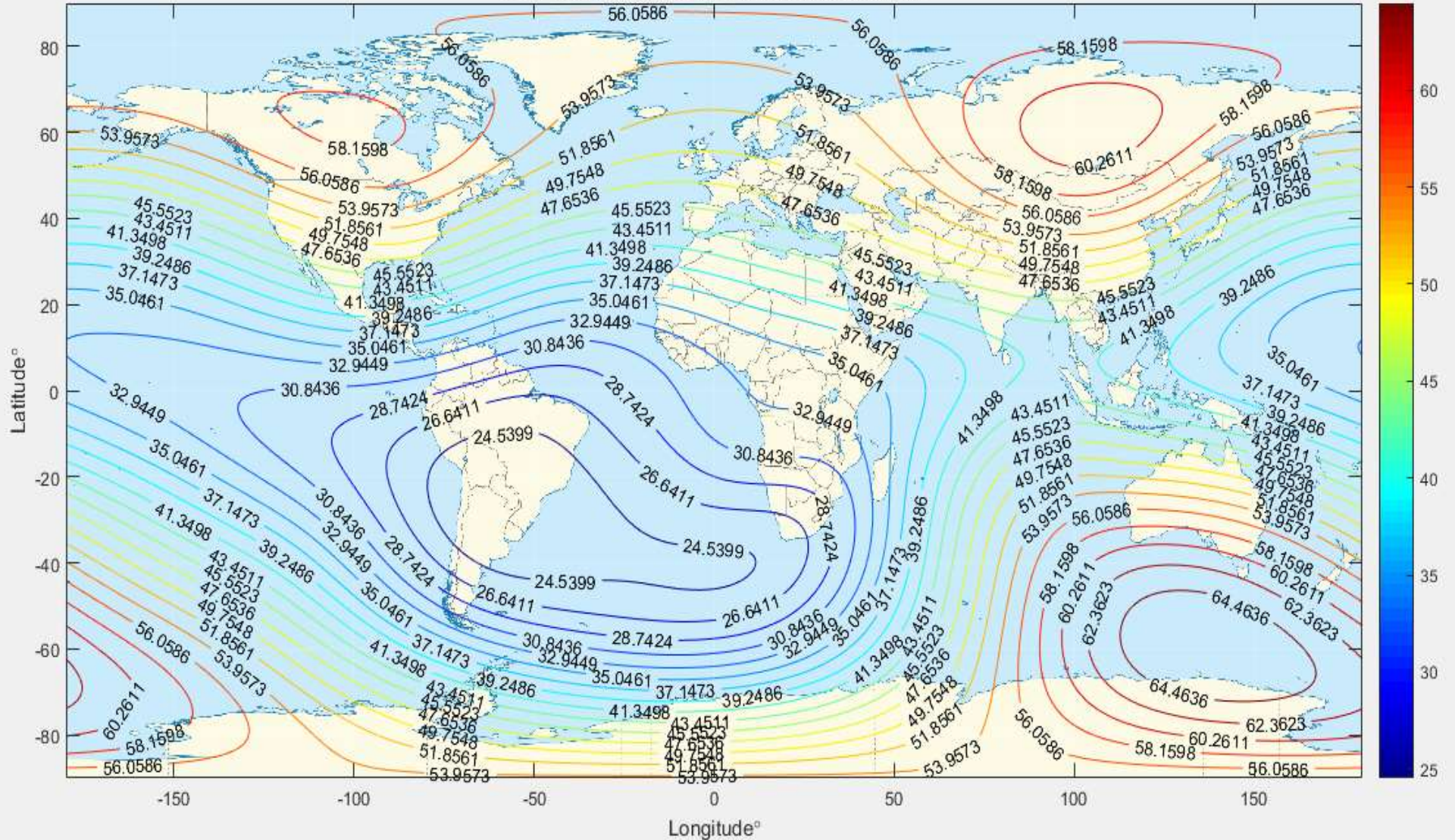
# Graduation Projects

## 1- Design , Test and Implementation of the ADCS software

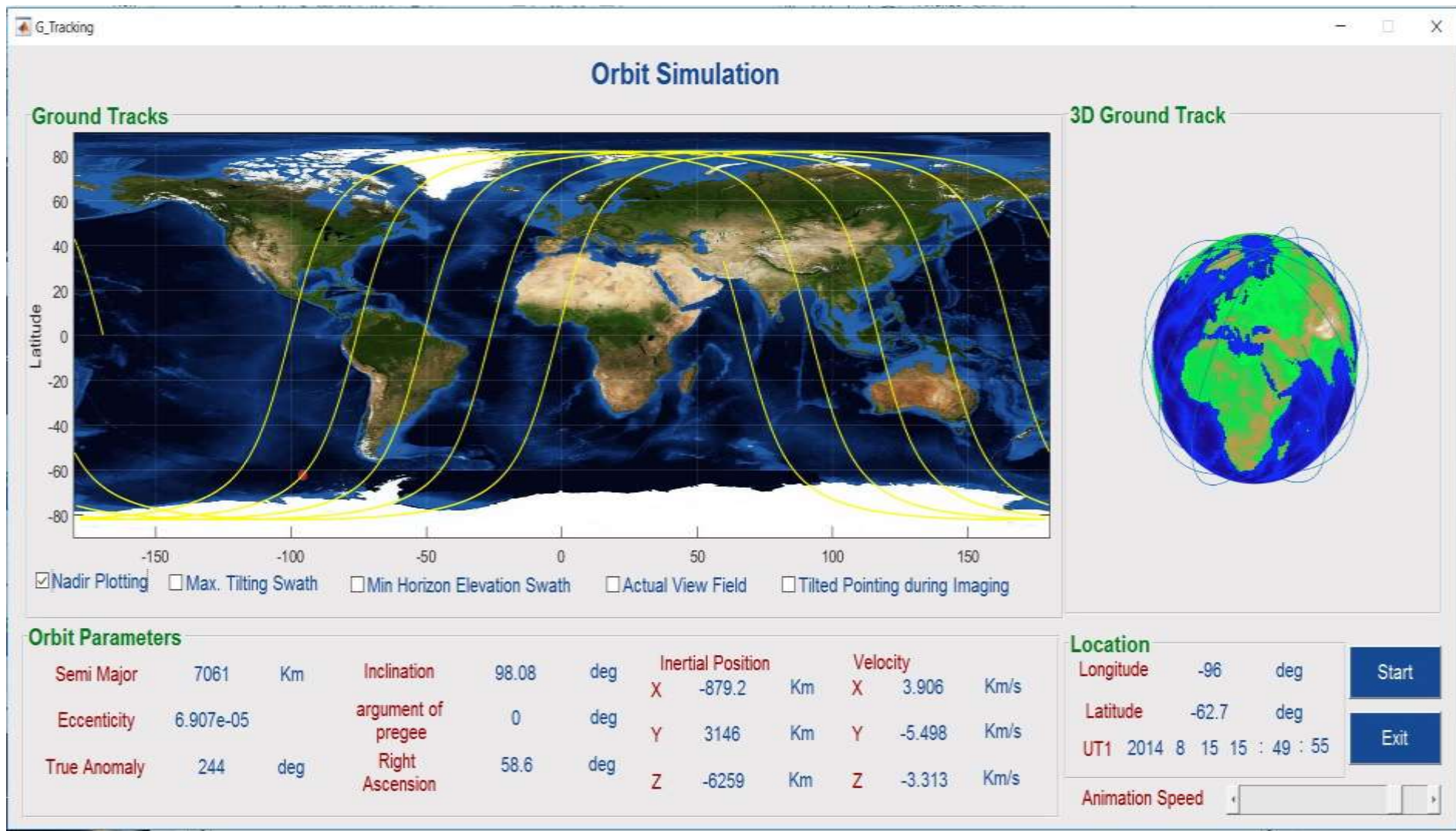




Geomagnetic Field Countour ( $\mu T$ ) 18-july-2017

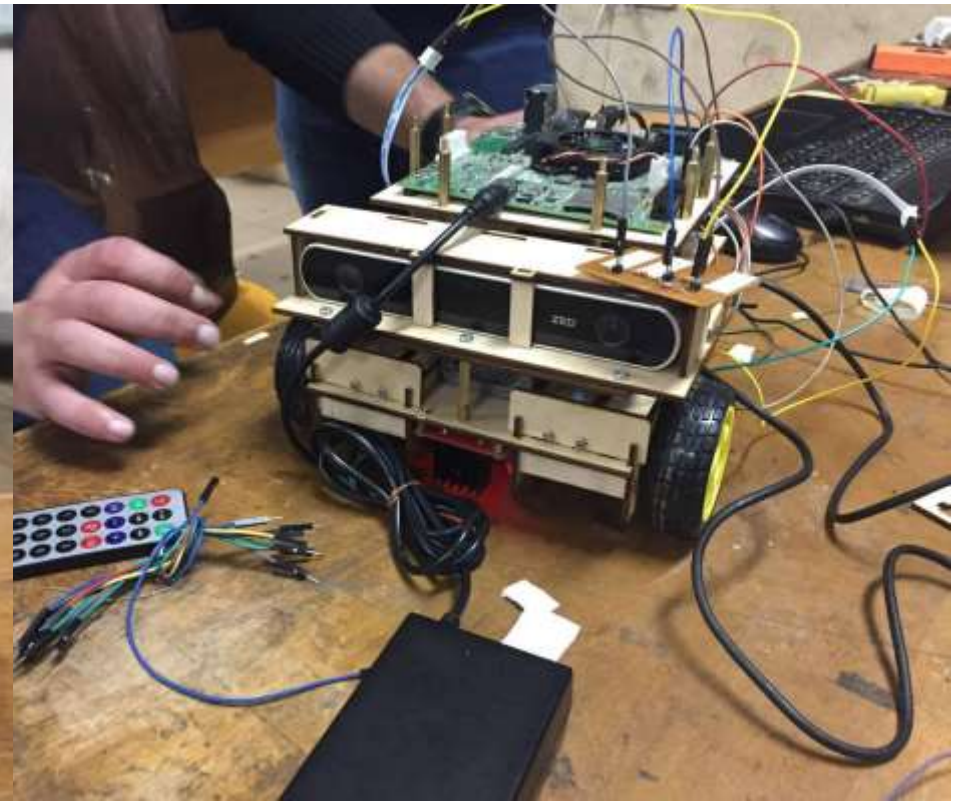
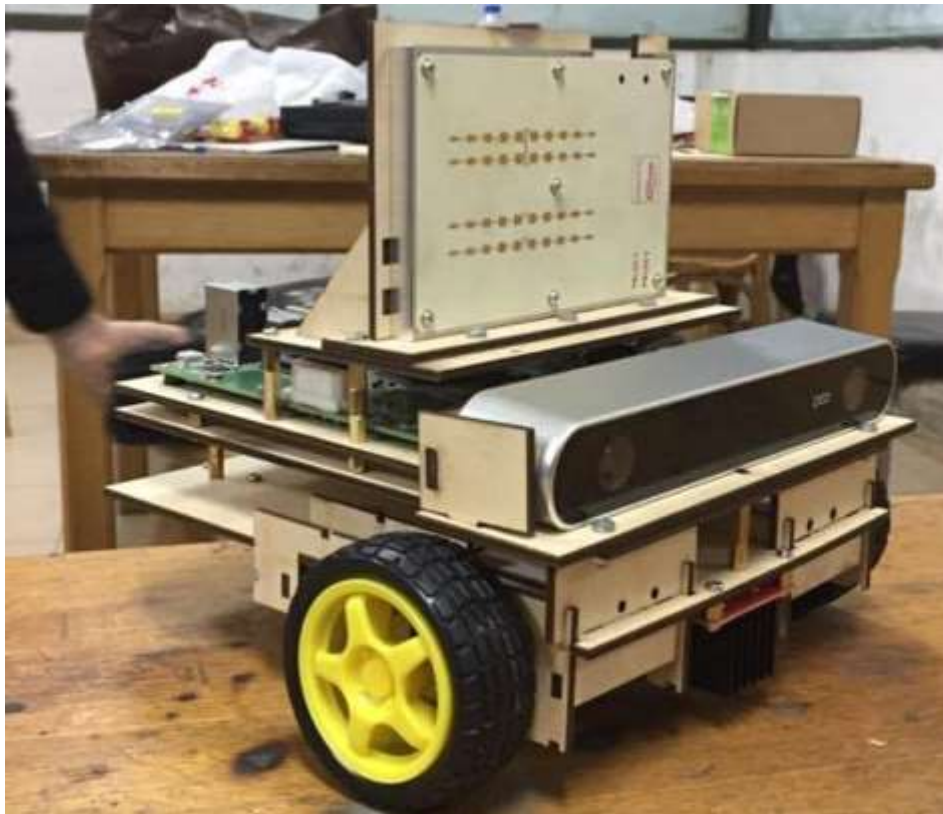


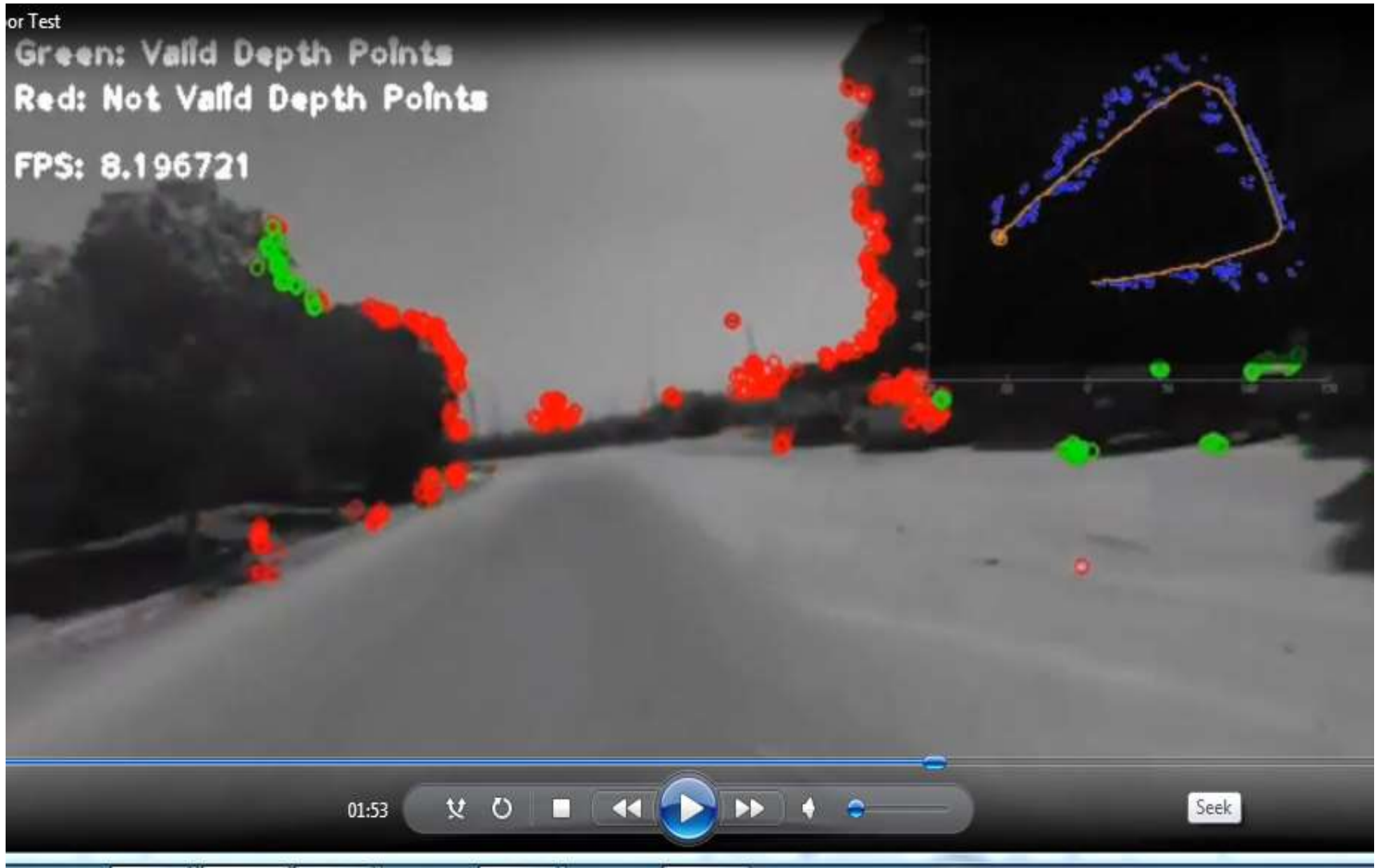




# Graduation Projects

## 2- simultaneous localization and mapping (SLAM)

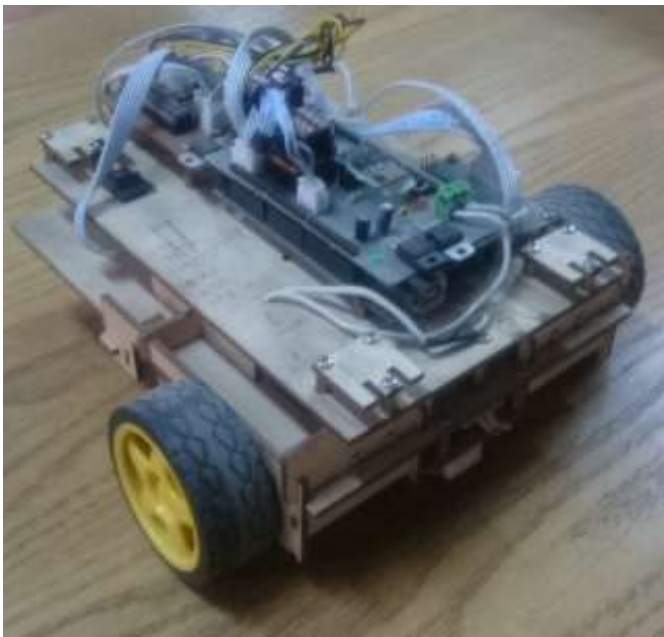






# Master Theses

- Finished Master thesis: ROVER NETWORKS USING DISTRIBUTED CONTROL TECHNIQUES (Formation)



(a)  $t = 0$  sec



(b)  $t = 1.4$  sec



(c)  $t = 3.25$  sec



(d)  $t = 5$  sec

Work in progress: SLAM , Object recognition, High fidelity orbit propagators.

# Future Plan

- Continue with our educational and research programs and improve it.
- Cooperation with Unisec-global and Nihon University to have a Hepta-sat training in Egypt.
- Set the Can-sat program to pre-college and start our first Hepta-sat education program for AE students.
- Concentrate on space research to graduate enough engineers for the Egyptian Space Agency.



thank  
you

**Ready for Questions**