# Future Mission on Introduction of Space Engineering in Bangladesh


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# Outline

- Introduction
- Experience on Space Engineering
- Significance of UNISEC Activities in Other countries like Bangladesh
- Student Activities in Bangladesh
- Future Plan on Space Engineering in Bangladesh
- Conclusion

# Introduction

- Space Engineering, Science and Technology is still in its infancy in Bangladesh.

- This presentation will focus on the current status on the subject and highlight future direction towards capacity development, promotion and application.

# Experience on Space Engineering

- I am doing research on "Thermal analyses of Micro and Nano Satellites" that is a part of Space Engineering, Science and Technology.
- I visited
  - Akabira Experimental field of Mini CAMUI Rocket Launching
  - Taikicho Rocket Lunching field in Hokkaido, Japan.
- I completed CanSat Leader Training Program 4, 2013.

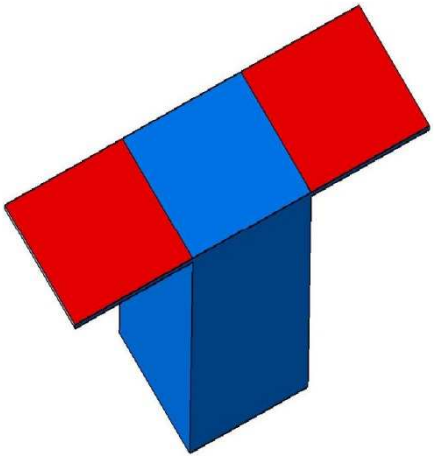
  My page directory as a participant of CLTP4 is given below

  http://www.cltp.info/cltp4/das.html

  I will join CLTP5 as teaching assistant in CLTP5 will be held in Hokkaido University.

# Research Topic

"Thermal analyses of Micro and Nano Satellites with Deployable solar panel on Sun-synchronous and Circular orbit"



## Importance of Thermal Analyses

1. A weird environment in Space due to sun shine and shadow of earth on Micro and Nano satellites.
2. Low power generation ability by small satellites, so active thermal control system can not be applied by heater and space radiator.
3. To reduce cost and shorten production time of Micro and Nano satellites.
4. Little heat capacity implies limited temperature range of components of satellite.

# Video of Mini CAMUI Rocket Launching during Akabira Visit

Video

# CanSat Leader Training Program

The CanSat Leader Training Program (CLTP) is a training course that was established for participants to experience the entire cycle of CanSat development from the design to launch of model rockets.


CanSat contains all of the components, such as sensors, actuators, and GPS, are placed inside a **350-mL can.**

# CanSat Leader Training Program 4 (CLTP4)

**Preparation for CanSat Fabrication with participant from other countries like Angola, Bangladesh, Mongolia, Philippines, Mexico during CLTP4 in Keio University, Yokohama, Japan.**

# Objective of CanSat

- to measure the temperature
- to find the track of Cansat moving
- to measure pressure
- to capture picture at high altitude
- to make a video during landing on the ground

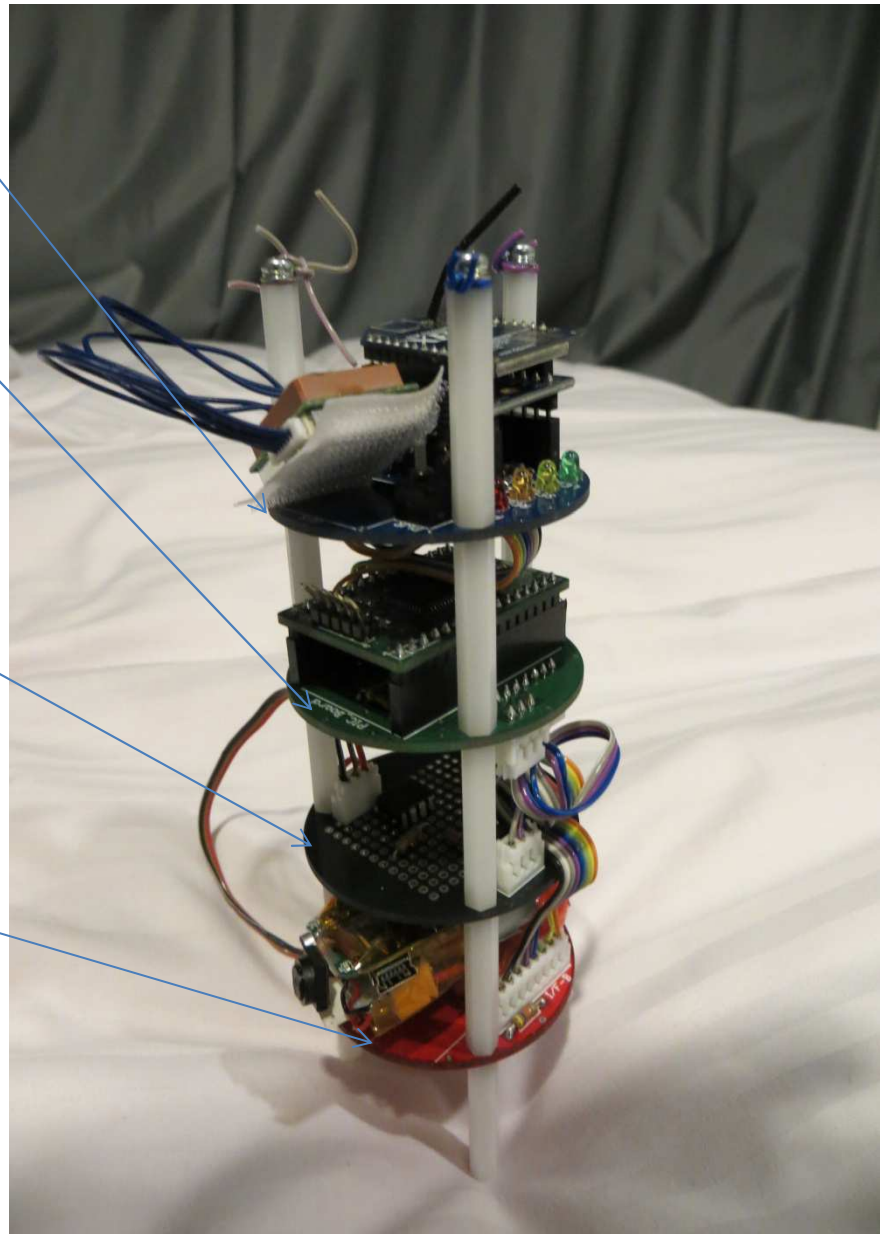
# My CanSat Configuration

Top part: Xbee, GPS module, LED, Main switch, Read_Jumper

Middle part: Pic Board, EEPROM memory, Relay Camera etc.

User design part: Temperature, pressure sensor etc.

Bottom part: Camera, Battery, Separation Jumper etc.



# Kite Plane for CanSat Launching

# Balloon for CanSat Launching

# Rocket Experiment

Rocket was launched by CanSat of CLTP4 participants.

It can lunch 3 CanSats together.

It was propelled by gun powder.

It can reach around 150 m.

# Track of CanSat by GPS Visualizer during Balloon Experiment

# Track of CanSat movement for Rocket experiment

## Mission Idea Contest (MIC) of UNISEC

- Prof. Tarekul Islam of Bangladesh University of Engineering and Technology is working as a coordinator of MIC in Bangladesh. He has imparted a couple of seminars regarding MIC.

- It is expected that in near future students and researchers from Bangladesh would be able to participate in MIC.

# Significance of UNISEC Activities in countries like Bangladesh

- To introduce space engineering, technology, science etc in our university as well as general people.
- To motivate and find out potential students and researchers
- To encourage students, researchers in space systems
- To guide the nation toward the developments of space engineering.
- To provide benefits of Space Technology to general people in our country.
- To create new idea for future space mission.
- To accelerate the race of space development.

# Student Activities in Bangladesh

- Participation in International competition like **Annual NASA Robotic Mining Competition** formerly known as **Annual Nasa Lunabotics Mining Competition.**
- **Eco Run Project** is a kind of competition to make small vehicle to reach maximum distance by specific amount of fuel consumption. It is supported by Japan.
- Line tracking **Robot Race Competition** supported by local industry and organization.

# Nasa's 4th Annual Lunabotics Mining Competition, 20-24 May, 2013
# Participants from Bangladesh

Bangladesh University of Engineering and Technology **(BUET)**

Chittagong University of Engineering and Technology **(CUET)**

# Other Participants from Bangladesh

- Military Institute of Science and Technology **(MIST).**
- Islamic University of Technology **(IUT).**
- North South University **(NSU).**

# Awards

- **System Engineering paper Award**
  MIST secured 2nd position
  Based technical report of the robot from engineering point of view.
- **Team Spirit Award**
  MIST secured 3rd position
  stretching from the date of registration till the end of the competition .
- **Luna Worldwide Award**
  MIST obtained the 1st position
  BUET team obtained 3rd position
  They were given the task of promoting the campaign in Bangladesh and USA.
- **Outreach Project Award**
  MIST obtained 1st position
- **Mining Category**, the team, MIST and BUET secured 11th and 15th position respectively


Second Place,
(in Systems Engineering Paper Award)

Third Place
(in Team Spirit Award)

## Military Institute of Science and Technology, Bangladesh!

First Place
(in Luna Worldwide Award)


First Place
(in Outreach Project Award)

# Bangabandhu-1 Satellite

- **Bangabandhu-1** will be Bangladesh's first satellite.
- It is expected that the satellite would be launched into space in 2015.
- The project will cost **$ 28 million.**
- Satellite's life span will be around **15 years.**
- The satellite will stay at **102 East longitude**.
- **US firm Space Partnership International** is assigned to design and to launch the satellite.

# Future Plan on Space Engineering

- To introduce undergraduate and graduate degree programs on space engineering and technology in other universities in Bangladesh.
- To organize seminar, workshop and other activities for creating awareness and promoting space education with the help of UNISEC, Japan
- To invite some famous professors and scientists in Bangladesh to create strong motivation and impart lectures on space engineering and technology.

# Conclusion

- ✓I believe that this UNISEC global meeting will assist us to explore our knowledge in Space Engineering in our country
- ✓In addition it will enhance global network of Space Engineering through future collaboration with UNISEC activities.


Thank you all
and UNISEC