DON BOSCO INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION

IEEE-DBIT MTT-S STUDENT BRANCH

Report on Day 1

"CAN SAT-Designing & Launching Workshop"

Topic: "Basic Information of a satellite and difference between a Cube and Can Satellite" and Can modelling

Date: 13th March, 2023

Time: 9:00 am to 5:00 pm

Venue: Don Bosco Institute of Technology, Kurla, Mumbai 400070

Speaker: Prof. R.R. Elangovan Ex- ISRO scientist, Ms. Dipti Ramesh, Mr. Nandan, Mr. Akhilesh from Black Hole Space Tech, Bangalore.

Participants: 12 IEEE members 68 non IEEE members

Objective: Knowledge on different satellites, difference between a CAN SAT and CUBE SAT

- Students will get hands on experience of how to design a drop off satellite using TinkerCad.
- Interactive session with trainers to understand CANSAT design and deployment process.
- Motivational talk by Prof. R.R. Elangovan inspiring students to take up career paths in satellite design and deployment domain.

Description:

- IEEE-DBIT MTT-S Student Chapter organised a workshop of "*CANSAT-Designing & Launching*" for the entirety of DBIT as well as other colleges on 13th March & 14th March 2023.

- The workshop commenced on 13th March at 9:00 am with an expert talk by Prof. R.R. Elangovan, Ex-ISRO scientist ISRO.

- He gave insights on different types of satellites, escape velocity needed for getting satellites into a specific altitude. He introduced the concept of space travel to audience.

- After a break the workshop resumed at 11:30 am, Prof. R.R. Elangovan spoke about Global Positioning System (IRNS). He informed about the statistics of satellites in the world, the rapid rise of satellites in the world and the 332% expectant increase by 2028.

- He shared interesting experiences with Dr. A.P.J Abdul Kalam, that impacted his life when he was working with him on a software Computational Aerodynamics to test the missile in a virtual background.

- Ms. Dipti Ramesh of Black Hole Space Tech took over the session after the lunch break and explained about CANSAT design and deployment.

- She explained the various problems to be addressed by the different parts of the satellite.

- Ms. Dipti Ramesh, Mr. Nandan and Mr. Akhilesh of Black Hole Space Tech explained the use of EPS for any Satellite as there is limitation of space and weight so that no solar panel's can be added which could increase the weight making the payload heavier than the given specification. The need of an ADCS (Altitude Determination and Control System) to determine the position of the satellite in free space was explained to the participants. She mentioned that 3 action reaction wheels are used in a CANSAT and a 6 axis Gyroscope is used for a CUBESAT.

- A problem statement was provided to the students by the trainers which said: To check the amount of carbon Monoxide, Altitude, Temperature, Pressure. A sturdy structure had to be designed and students could use any software for designing of the CANSAT.

- Specifications that entailed were as follows:

    1. CANSAT doesn't weigh more than 350 kg.
    2. Descent velocity should be 8 m/s to 10 m/s.
    3. Height of the CANSAT should be exactly 115 mm/ 11.5 cm.
    4. Diameter of the CANSAT should be 66 mm/ 6.6 cm.

- The students were guided through the course of time to prepare a functional design with the exact specification.

- The most unique design prize was announced, the participants had to work towards the goals to make a most unique and most functional design.

- The session ended with refreshments.

Summary of session analysis:

From the analysis we can determine, that the majority of the attendees were students. Most of the participants have responded that the session was relevant and well organized. The questions asked during the workshop were answered in appropriate and satisfactory manner. The attendees agree that the overall session was valuable and informative. As reflected by the feedback, attendees felt that they can now better understand the fundamentals of satellite and design principles of a basic CANSAT for a given problem statement. Significant number of people are interested in participating in future workshop's.

A membership desk was put up at the venue, and announcements made to encourage IEEE memberships. The participants visited the desk and registered their names, to seek further guidance in enrolling as new IEEE members.

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Picture from the session:

Prof. Elangovan, Ex-ISRO Scientist

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Mumbai, Maharashtra, India
Don Bosco Institute of Technology, Mondini hall, 4th floor,
Mumbai-400070
Lat 19.081857°
Long 72.888333°
13/03/23 11:56 AM

Ms. Dipti Ramesh of Black Hole Space Tech while training

Participants working on problem statement

Participants at work

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Group picture of IEEE DBIT-SB and few participants of workshop with Prof. Elangovan and Trainers of Black Hole Space Tech

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Report on Day 2

"CAN SAT-Designing & Launching Workshop"

Topic: "Basic Information of a satellite and difference between a Cube and Can Satellite" and Can modelling

Date: 14th March, 2023

Time: 9:00 am to 5:00 pm

Venue: Don Bosco Institute of Technology, Kurla, Mumbai 400070

Speaker: Ms. Dipti Ramesh, Mr. Nandan, Mr. Akhilesh from Black Hole Space Tech, Bangalore.

Participants: 12 IEEE members 68 Non-IEEE members

Objective: Designing and deployment of CANSAT by the participants.

- Students will get hands on experience of making their own CANSAT.
- Interactive session with trainers to understand CANSAT design and deployment process.
- Informational talk by Ms. Dipti Ramesh.

Description:

- IEEE-DBIT MTT-S Student Chapter organized a workshop of "*CANSAT-Designing & Launching*" for the entirety of DBIT as well as other colleges on 13th March & 14th March 2023.

- The workshop continued on 14th March at 9:00 am by Ms. Dipti Ramesh.

- Ms. Dipti Ramesh instructed the participants to complete their designs for submission in the competition.

- Design submission continued till 10:30 am after which 14 designs were short listed for the

competition.

● Ms. Dipti Ramesh continued the session with a new topic at hand namely Avionics which consisted of attaching a proper parachute for safe landing of the CANSAT.

● Mr. Akhilesh distributed the nylon cloth used for the parachute which consisted of two side one which had the knitting of the nylon material for more rigidity and the inner section made up of a rough rubber coat which provided resistance against air.

● Mr. Nandan instructed the students on making their own parachute and demonstrated to the students a step by step procedure on making a complete parachute.

● Mr. Akhilesh instructed students to make alternating holes in their parachute near the edges to tie the shock cords.

● After attaching the shock cords participants were instructed to make small hole on the cap of their CANSAT so the shock cords can be tied in a knot and the parachute can be attached to the CANSAT.

● Ms. Dipti Ramesh also measured the weight of individual CANSAT so it didn't exceed the weight of 350g and the optimal weight range given was from 170g to 200g as having a lighter CANSAT can also affect the Avionics of the CANSAT.

● Students completed their CANSAT and were led outside the hall for deployment of the CANSAT where Ms. Dipti Ramesh instructed the participants on how to properly deploy a CANSAT with least amount of errors.

● The session ended with declaration of winners and refreshments.

Summary of session analysis:

From the analysis we can determine, that the majority of the attendees were students. Most of the participants have responded that the session was relevant and well organized. The questions asked during the workshop were answered in appropriate and satisfactory manner. The attendees agree that the overall session was valuable and informative. As reflected by the feedback, 33% of attendees felt that they can now better understand the

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A membership desk was put up at the venue, and announcements made to encourage IEEE memberships. The participants visited the desk and registered their names, to seek further guidance in enrolling as new IEEE members.

Picture from the session:

Trainers reviewing participants designs and providing feedback for improvement

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Students completing their CANSAT hardware for deployment

Ms. Freda Carvalho helping participants with their code

Ms. Dipti Ramesh explaining participants how to make an optimal parachute

Ms. Dipti Ramesh instructing students on deployment of their CANSAT

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First Prize Winners for CANSAT workshop from Fr. Conceicao Rodrigues College of Engineering, Vashi, Navi Mumbai

Atharva Pasalkar, Justin Mascarenhas, Sayali Dongre

Second prize winner for CANSAT workshop form Vidyavardhini's College of Engineering, and Technology, Virar, Mumbai.
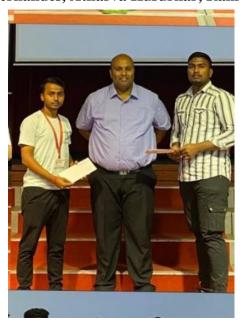
Mihir Gosavi, Ritik Gharat, Sahil Gorivale

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Consolation prizes for the most unique design in CANSAT workshop from Don Bosco Institute of Technology, Mumbai

Melissa Fernandes, Atharva Kusurkar, Rahi Prajapati

Consolation Prize winners of Cansat Workshop from Don Bosco Institute of Technology Ramesh Kumar Pal, Mitesh Fulwariya, Faiz Shaikh

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Commemorative picture of the IEEE executive team with the team of Black Hole Space tech

Membership desk was put up at the venue showcasing all IEEE events of Student Branch activities

Report Prepared by: Mr. Aditya Jadhav

Reporting Head, IEEE-DBIT Student Branch.

Report Approved by: Freda Carvalho, IEEE DBIT SB Counselor & IEEE Executive Team