

DJS ARYA 2018-19

About us

DJS Arya, official canister satellite team of D. J. Sanghvi college of Engineering(DJSCE), Mumbai. It was formed in the academic year 2017-18. DJS Arya represents DJSCE at the International CanSat competition organized by the American Astronautical Society (AAS) and American Institute of Aeronautics and Astronautics (AIAA). CanSat is a global level competition where colleges from all around the world participate. This competition encourages young talent to come up with ideas about building Canister Satellite. The contest is organized in affiliation with U. S. Naval Research Laboratory, NASA, Siemens, etc. Launch location is Stephenville, Texas.

Objective of CanSat Competition

The American Astronautical Society (AAS) and American Institute of Aeronautics and Astronautics (AIAA) have organized an annual student design-build-launch competition for space-related topics. Although similar competitions exist for other fields of engineering (robots, radio-control airplanes, racing cars, etc.), most space-related competitions are paper design competitions. While these are worthwhile, they do not give students the satisfaction of being involved with the end-to-end life cycle of a complex engineering project, from conceptual design, through integration and test, actual operation of the system and concluding with a post-mission summary and debrief. This competition fulfills that need!

This annual competition is open to teams from universities and colleges. Teams must be able to design and build a space-type system, following the approved competition guide, and then compete against each at the end of two semesters to determine the winners. Rockets will be provided but teams are responsible for funding the construction of their CanSat and all travel/lodging expenses. Launch location is Stephenville, Texas.

The competition consists of 5 different stages:

Phase one is the application phase.

Phase two is the Preliminary Design Review (PDR).

Phase three is the Critical Design Review (CDR).

Phase four is the launch weekend.

Phase five is the Post Flight Review (PFR).

Achievements

Last year, in the first attempt we stood 96th among 300+ teams at CanSat 2018.

This year we have successfully launched our satellite being in the top 40 of 400+ participating teams at the CanSat Competition 2019 amongst teams coming in from all over the world. Ranking in the top 10 amongst the teams participating from Asia.

We hope to have represented our country well on the international platform! The prospects of our future have only strengthened with such a debut into the big leagues! We shall try to reach greater heights next season!

Importance

We got an opportunity to make a project based on telecommunication and this project has helped us understand more about telemetry. The team's focus was to build a prototype according to the problem statement and with this prototype as a reference, two more models were built and tested. We as a group represented our college and our country at an international level. This will be a motivation for future batches of our department to take the CANSAT tradition one step ahead and expose us to industrial applications.

Participating in this competition has helped us understand the various complexities involved in making a Canister Satellite. Moreover, it has provided us with the invaluable experience of working in a team, while participating on an international level and representing our institution.

Lessons learned

- Loose wire caused occasional resets in data.
- Verification of electrical connections one by one helps verify if there are any loose connections that need securing.
- It was easier to make changes to the structure after modeling and testing rather than re-working on designs using aerodynamic laws.
- Keep enough time for manufacturing and testing as they are just as time consuming as designing.
- Perform tests from the required altitude with the antenna such that connection is established early even at a higher altitude.
- Optimal design for PCB should be made for better integration for fitting in structure.
- Taking visa rejection ratio into consideration while team selection.
- Logistics for battery selection needs to be analyzed.
- Recovery team should be larger in size, waiting at different points near launch site for easier recovery of CanSat.
- Concentrating on all basic objectives first, as simple design is more effective and there are no extra points for innovative design.
- Telemetry data needs to be sent continuously to maintain the connection with the Ground Control Station.
- Perform more number of entire CanSat model tests after the integration of individual system
- Prototypes for testing should be ready by the time of PDR submission.

The experience this year will help the next team prepare better for next year.

Picture Gallery

