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THE DEVELOPMENT OF AN UNDERGRADUATE GROUND STATION PROJECT FOR SPACE EDUCATION

Abstract

Of the complaints passed through engineering university halls one that stands out is the lack of meaningful projects available. Many students want to work on projects they can be proud of and unfortunately such is lacking in many universities. There is simply not enough time to construct a large project in a singular semester and as such many students turn to clubs and design teams. At Carleton University one design team which has stood out in this front has been CU-Stellar, Carleton University's ground station development team. The reason for their fortitude is that it is a student-run club designed solely for long term development. Other clubs compete in competitions on an annual basis however CU-Stellar does not compete in competitions, it exists solely as a design team with goals set internally by members. There are many benefits to this. For one, CU-Stellar put a lot of emphasis on teaching students the ins and outs of startup development. One aspect of this exists in the financial strain put on the low-budget design team. The team aims to stay as low budget as possible to allow for rapid development. By using commercial off the shelf and self-manufactured parts members can iterate on their designs quickly without greatly worrying about financial implications. Speaking of which, this design team also teaches students about the design process seen in startups and how designs are improved over time. With this, CU-Stellar gives students long-time real-world experience which would otherwise be impossible in class. By not being confined to the rigors of a standard two semester system, CU-Stellar can operate year round. Long exposure to varying aspects of engineering helps students learn what side of engineering they are truly passionate about which greatly aids them once they embark on their professional journeys after graduation. Finally, the ground station development project is a great project for students as it allows for creative design and iteration. By remaining low budget and not having a fixed goal students can decide what they would like to do with the project and they get to choose how they get there. Allowing this freedom shows undergraduate students the reaches of engineering and how creativity plays a role in the development of an engineering project. The implementation of a CubeSat development project into other universities would be of great benefit to undergraduate students and would greatly improve the quality of engineers graduating.