

**CECIL, 1U Amateur Radio CubeSat**  
(Technical Report)

**Using Care Ethics to Analyze the Morality of Facebook's Actions in Myanmar**  
(STS Research Paper)

An Undergraduate Thesis Portfolio

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School of Engineering and Applied Science  
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Bachelor of Science in Aerospace Engineering

By

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**Socio-technical Synthesis: CECIL 1U CubeSat and Morality of Facebook on Myanmar**

My technical work and STS research are connected through the idea of project management, and how management actions and decisions can not only affect the teams managed teams, but potentially entire nations. For my technical work, I was one of two managers working on designing a 1U CubeSat that will be able to communicate with amateur ground stations around the world, as well as taking pictures of Earth from low earth orbit. On the other hand, my STS research focuses on the ethical dimensions of Facebook's implementation of their platform on the nation of Myanmar. Although my technical and STS projects pertain to different technologies, working on both projects at the same time has allowed me to grow as an engineering manager in both the technical and ethical spectrums.

My technical work focuses on developing a low-cost, reliable 1U CubeSat that is able to operate within amateur radio frequencies. The standardized 10x10x10 cm satellite will serve to provide students with real-world technical skills in orbit determination, structural design, thermal and power design, and well as coding and project management. The 1U CubeSat, named CECIL, is designed to work as a repeater for amateur radio ground stations around the world, as well as to take pictures of Earth from the same orbit as the ISS. It is through this project that UVA not only wants to establish itself as a capable and reliable satellite building school, which will hopefully open the path for more complex projects and better funding, but also to include the amateur radio community on this endeavor as well as inspire Virginia's next generation of

engineers. This multidisciplinary project will span over 3 years, from the brainstorming phase to the deorbiting phase. I was one of the two Program Managers of this year's class which took the project from problem definition phase to the preliminary design review (PDR) phase.

My STS research also focuses on Project Management, but of a very different technology at a much bigger stage. My research explores the actions involving the implementation and subsequent substantiation (or lack thereof) of Facebook's platform taken by the corporation, from an ethical standpoint. Using the Care Ethics framework, I sought to determine whether Facebook owed a duty of care to its Myanmar users and if the corporation's actions adequately provided integrity of care. Using three elements of care as defined by Joshua Kardon (Responsibility, Attentiveness and Competence), I claim that Facebook owed a duty of care to its Myanmar users and that the company's failure to provide integrity of care was an act of immoral negligence.

Working on both projects simultaneously undoubtedly made my experience as a project manager much more valuable. My technical work gave me the tools and experience to become a better team leader and project manager, whereas my STS research provided me with an ethical framework from which to judge my decisions as manager. Although my project is smaller and does not have the same moral dimension as the one I explored in my research, it allowed me to gain the necessary technical experience while also preparing me to better assess and solve moral dilemmas. In summary, working on both technical and research projects simultaneously have provided me with the necessary tools and experience to succeed as a moral engineer and future project manager.

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