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Guiding Your Students to New Heights in Space Cybersecurity

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Background

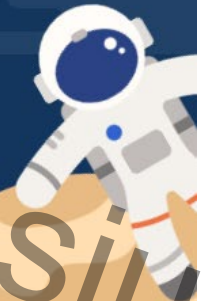
- DoD awarded grant titled Fullerton College SMART (Science, Mathematics, and Research) CREATES (Creative Research & Engineering Advancing Technical Equity in STEM) Collaboration with the Air Force Research Laboratory at Kirtland Air Force Base, New Mexico
 - Student interns
 - Faculty mentoring
 - Outreach webinars to under-represented groups
 - Literature review and article (3 or 4???)development from inception to publication
 - Neher, S., Groves, D., Yune, H., Rodriguez, R., Broaddus, S., & Cheng, E., Associated Attack Surfaces and Vulnerabilities of Space Vehicle Autonomous Functions, 2025 IEEE Aerospace Conference, in press.
- Primary objective to increase diversity in the DoD pool of applicants



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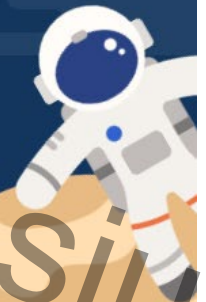
2025 CAE Webinars

- SMART CREATES Internship Announcement
- Effective Research Methods
- Department of Defense Introduction
- Space Cybersecurity
- Intern Spotlight
- DoD Careers Panel



Literature Review

- Literature Review conducted on publicly available space cybersecurity
- Resulted in
 - webinar
 - 3 articles, one of which to be published shortly in IEEE Aerospace Conference with students as co-authors





Findings

- Emerging field with limited research in public domain
- Unique challenges compared to terrestrial vehicles:
 - Space systems are a single point of failure for dependent critical infrastructure
 - Bandwidth limits
 - Limited resources for transmissions and reaction time
 - Cannot physically access them after deployment
 - All testing is done in virtual environments not on actual satellites
 - Potential damage from solar flares
- In higher education, space cybersecurity curriculum begins at the graduate level, if at all
 - Aerospace Corporation has development curriculum
- Onsite internships are priceless
- Students are very curious about the security clearance process

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Student Resources

- Department of Defense [SMART](#) and the Ronald V. Dellums Memorial SMART Scholarship
 - Undergraduate, master's, and doctoral students pursuing a STEM degree
 - Receive full tuition, annual stipends, internships, and guaranteed civilian employment with the DoD after graduation
- [Internships](#) with the Department of Defense (13 programs)
- [CyberCorp](#) Scholarship for Service
 - Funds colleges and universities for student scholarships in education relevant to cybersecurity
 - Recipients must agree to work after graduation for the Federal Government
- USAJobs.gov

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