CS 3560.03 Group Project Proposal

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Project Topic: Spacecraft Mission Monitoring System (SMMS)

Description of Problem and Proposed Solution: At any one time, a space program (like NASA) may have dozens or even hundreds of ongoing missions. Each mission requires a precise tracking of its spacecraft's maneuvers, fuel levels, status, and much more. Currently, most of these missions are monitored separately across different systems. Without a unified mission monitoring system, each mission's data is fragmented, which increases the risk of inconsistencies, delays in decision-making, or critical oversights. To address this challenge, we will create a centralized **Spacecraft Mission Monitoring System (SMMS)**. A centralized monitoring system enables real-time synchronization of the data of different missions and allows for better coordination, situational awareness, and results. The system can track *multiple* ongoing spacecraft missions, including their location, scheduled and executed maneuvers, remaining fuel levels, and critical system alerts, while also logging mission status updates, detecting potential risks, generating regular reports, and running mission simulations with corresponding reports.

Work Plan Sketch

- Identify use cases, classes, and draw diagrams - Joshua and Sonia - 1 months / March 21st, 2025.
- Implement system GUI, Data Base, and Methods - Nicholas & Thong- 2 months / Aiming to complete by April 18th, 2025.
- Finalize the project presentation file and report - Sonia & Julianna - 3 months / May 9th, 2025.