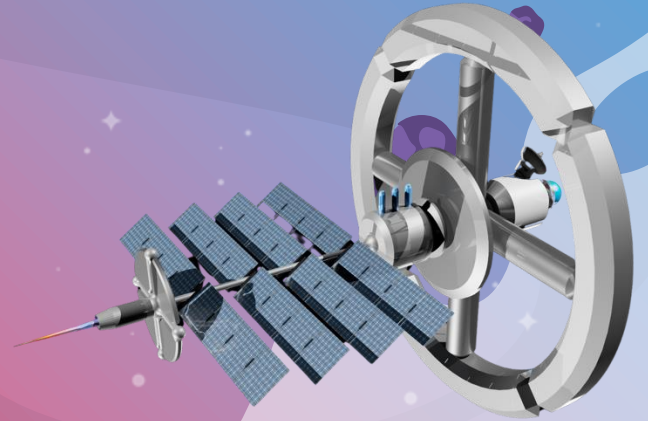


Weightless Odyssey

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Challenge Statement

- Objective: Design a game that leverages the unique challenges of microgravity to entertain and improve astronaut health—while laying the foundation for a future full-scale astronaut training simulation.
- NASA's Context: Astronauts face both physical and mental challenges in space. Our solution not only provides entertainment but also prepares astronauts for real-world scenarios through simulated critical thinking and problem-solving tasks.



Health in Microgravity

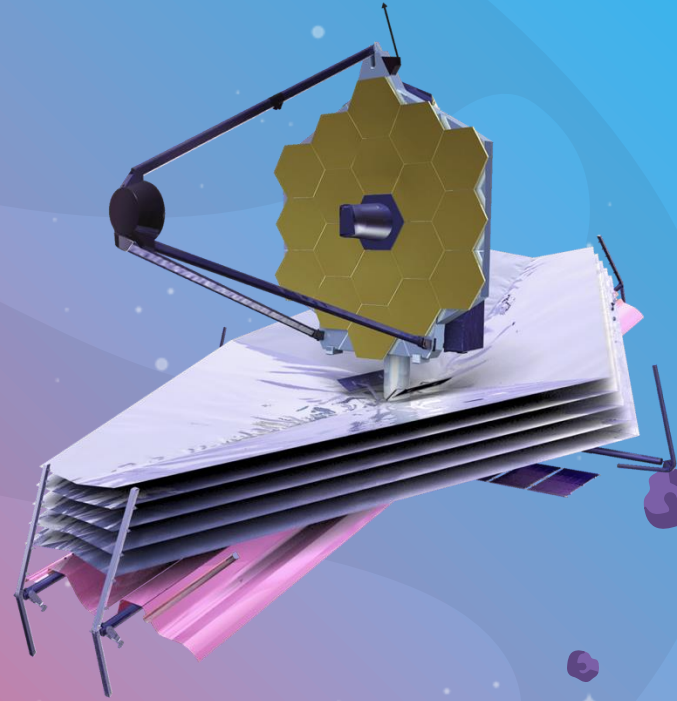
Key Issues:

- Muscle Atrophy, Osteoporosis, Fluid Shifts, Cardiovascular Deconditioning, and Mental Health.
- Our game prepares astronauts to manage these risks through exercises and mental challenges.
- **Future Vision:** We aim to develop a full astronaut training simulation, addressing both physical and mental health risks of prolonged space travel.



Inspiration & Game Concept

- **James Webb Incident:** Inspired by real-world challenges like the James Webb Telescope's meteoroid strike.
- **Solution:** Our game simulates space crises, preparing astronauts through real-time problem-solving.
- **Next Step:** Expanding the game into a realistic astronaut training tool with more complex missions.



Game Design for Training

Stages:

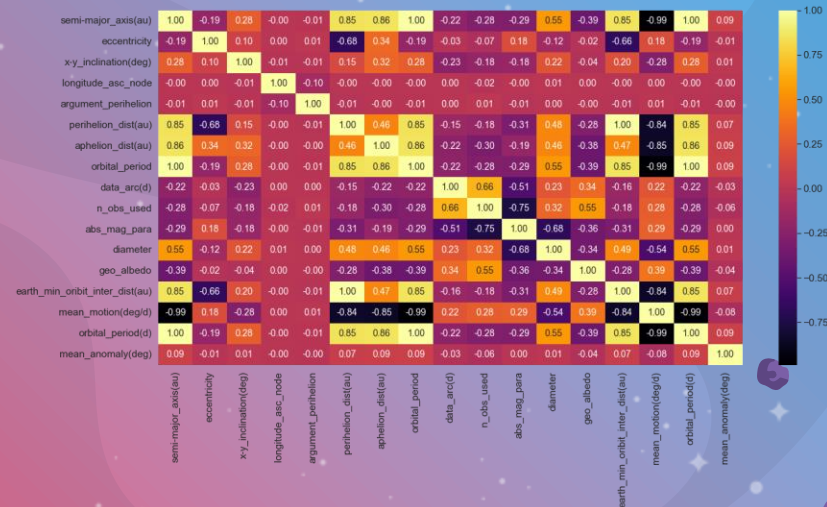
- Start with routine tasks, progress to critical failures (oxygen, power, etc.), and end with real-time asteroid risk assessment.
- **Training Future:** We aim to build this into a modular training tool for astronauts, focusing on survival and crisis management in space.



Innovation: Machine Learning & Asteroid Prediction

Machine Learning Integration

- **Asteroid Prediction Model:** We incorporate machine learning algorithms to track and predict the motion of space debris and asteroids.
- **Dynamic Risk Assessment:** Players assess the trajectory and potential impact of space debris in real-time, using our prediction model to avoid collisions.
- **Damage Mitigation:** If a collision occurs, players must repair the vessel or risk mission failure.
- **Future Expansion:** This machine learning-driven asteroid prediction model will evolve into a key feature of astronaut training, helping crews avoid catastrophic impacts on long-duration missions.



Impact of Weightless Odyssey

- **Holistic Health Improvement:** Enhances physical fitness and mental well-being, crucial for long-duration space missions.
- **Team Cohesion:** Fosters strong bonds and communication among astronauts through cooperative gameplay.
- **Real-World Training:** Prepares astronauts for emergencies, boosting critical thinking and problem-solving skills.
- **Adaptability:** Encourages resilience, essential for navigating the unpredictable challenges of space travel.
- **Aligns with NASA's Mission:** Supports astronaut well-being, contributing to successful human exploration beyond Earth.

