

Solution Plan

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ITAI 2372 – Conceptual Design Track

AstroPal – The AI Space Companion

How AstroPal Works:

AstroPal is designed to support astronauts emotionally and mentally by acting like a digital pet or companion. It uses artificial intelligence to hold conversations, check in with astronauts throughout the day, and offer personalized support based on how they're feeling.

Key Technologies:

- Natural Language Processing (NLP): Lets AstroPal understand and respond to astronaut speech.
- Sentiment Analysis: Helps AstroPal detect how the astronaut is feeling based on tone, word choice, and patterns.
- Machine Learning: Allows AstroPal to learn the astronaut's habits and preferences over time and become more helpful.
- Voice Interface: Operates by voice — no touchscreen or keyboard needed.
- Optional Integration: Could connect to smart devices (like wearables) to track things like heart rate and stress levels.

Daily Use Examples:

- In the morning, AstroPal could play music and say something positive to start the day.
- Throughout the day, it checks in with the astronaut's emotional state.
- If it detects stress or sadness, it might suggest calming music, a breathing exercise, or tell a joke.
- It can also read updates from Earth, give reminders, or just chat to keep astronaut's company.
- At night, it can log the astronaut's mood and say goodnight.