



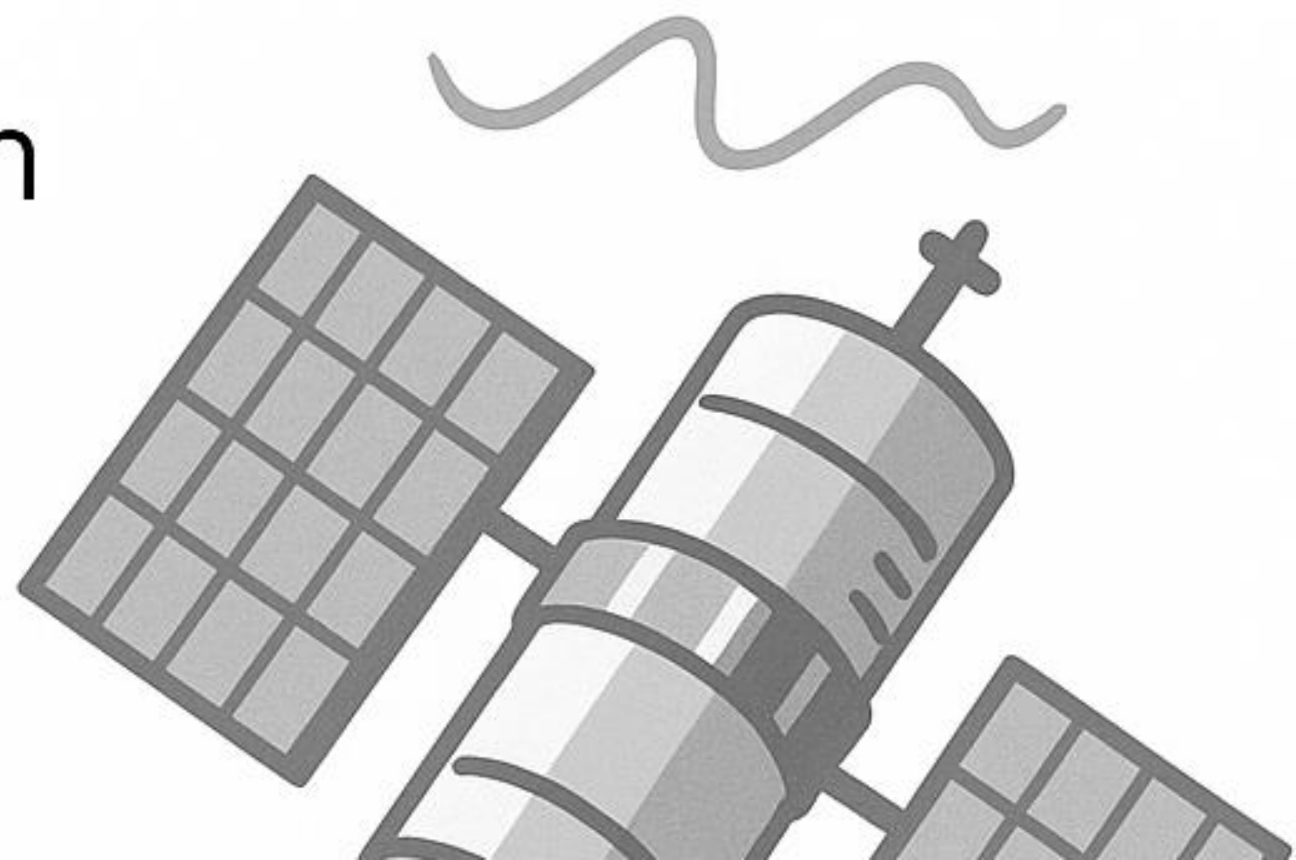
Keeping the Lights On in Space

Carlos Granillo | NASA Space Mission AI Project

THE PAIN

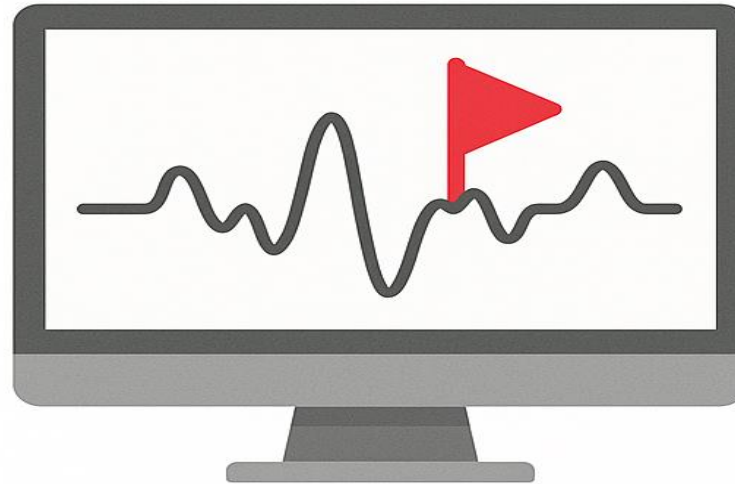


When a satellite's power flickers, the whole mission is in danger — and there's no repair truck in orbit.

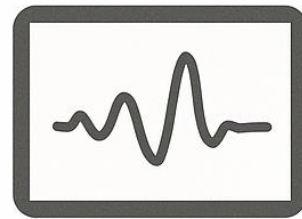
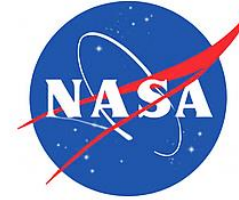


OUR FIX

A chatty little AI sits on watch, learns normal power patterns, and waves a red flag the second things look weird.



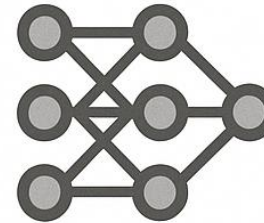
HOW IT WORKS



Live data



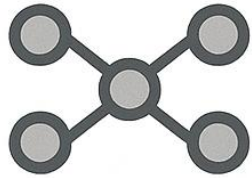
quick
clean-up



neural net
tries to
recreate it

≠ mismatch = "Uh-oh!" alert

BRAIN IN PLAIN WORDS

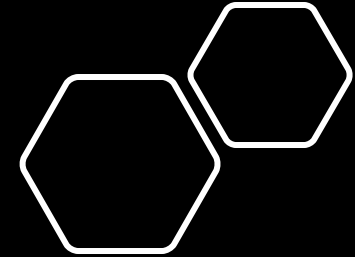


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memory of
"all is well"

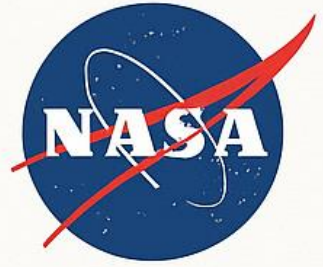
Tiny autoencoder

No labeled failures needed —
just show it healthy data



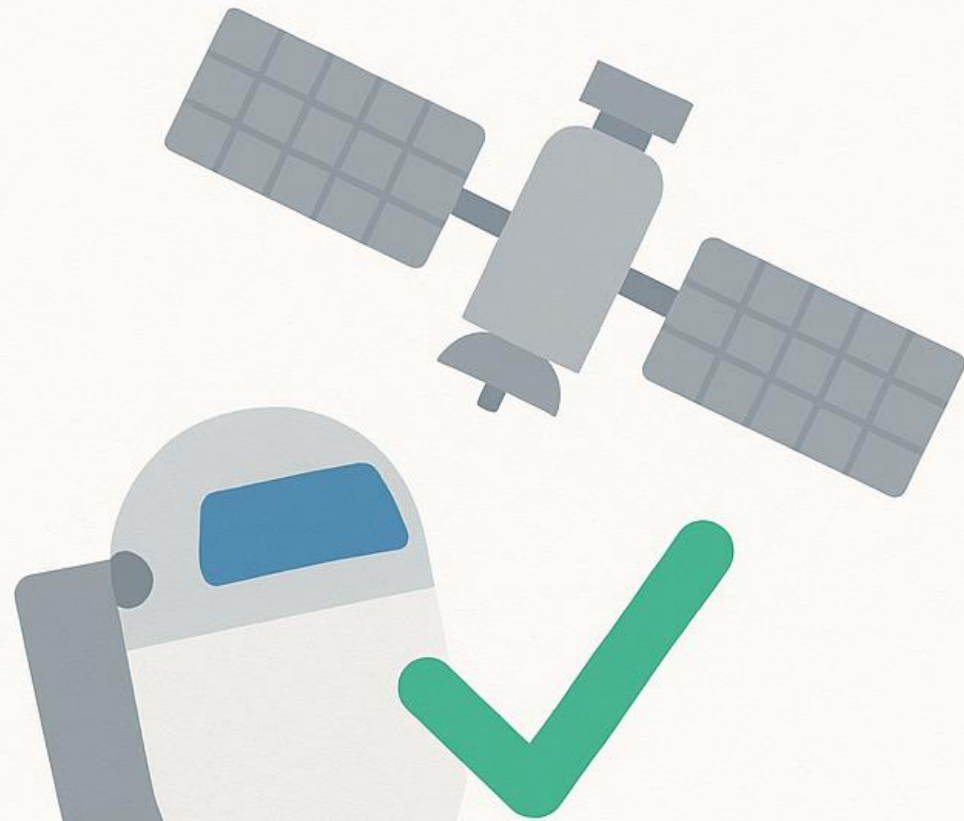
Proving It Works

We fake power drops, replay old mishaps, and track how fast and how accurately the AI spots trouble.



Why It Matters

Early warnings = saved missions, less downtime, and a step toward fully self-healing spacecraft



Conclusion

- In space, there's no room for error especially when it comes to power. That's why our AI solution is designed to quietly monitor satellite power systems, learn their rhythms and patterns, to sound the alarm when something seems off. It doesn't need a long history of past failures just a baseline of what normal looks like to know when something's wrong. By catching anomalies early, this smart little system can help to prevent catastrophic failures before they even happen. We've stress-tested it with real data and simulated glitches, and it continues to prove both fast and accurate. This project is more than just a technical achievement it's a step toward spacecraft that can look after themselves, reducing downtime, mission risk, and human intervention. In a future where deep-space missions become the norm, tools like this one will be essential to "keep the lights on" no matter how far away from Earth we go.