Polaris: Machine Learning for Satellites

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Outline

- What is Polaris?
- What's a cubesat?
- What's telemetry?
- Live demo
- Next steps
- Conclusions

Polaris
Machine Learning & SatNOGS

What is Polaris?

"Python tool for exploring and analyzing telemetry data obtained from the SatNOGS network"
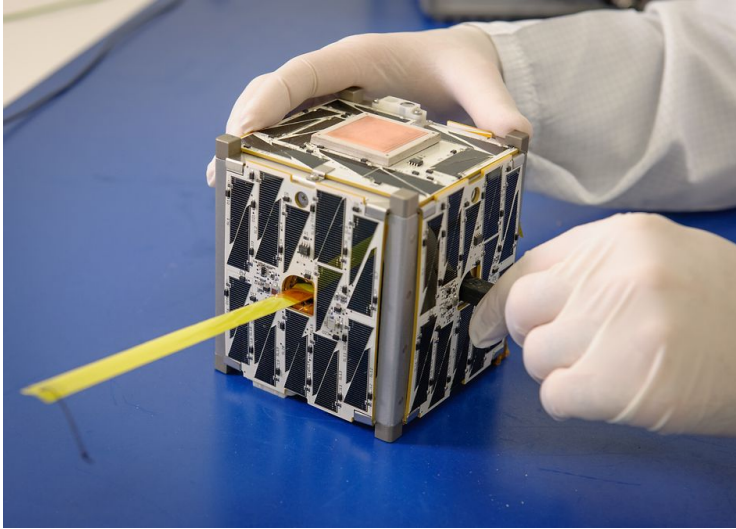
Polaris

Machine Learning & SatNOGS

Polaris in figures

- Supported by **ESA** and **Google**

- **+70** members in Riot

- **+430** commits by **9** different contributors

- **+50** Merge Requests
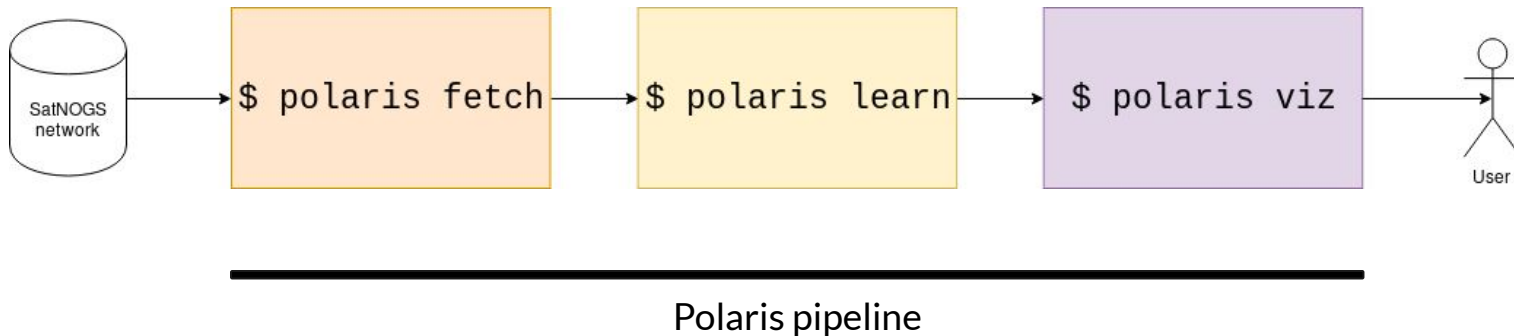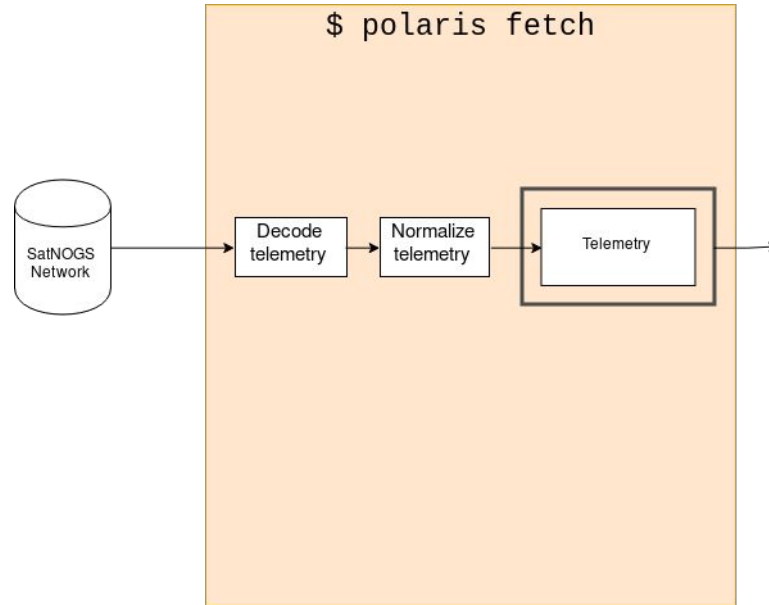
- **+50** Issues

What's a cubesat?

Polaris
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What's telemetry?

The architecture


```
SatNOGS
network   →   $ polaris fetch   →   $ polaris learn   →   $ polaris viz   →   User
```
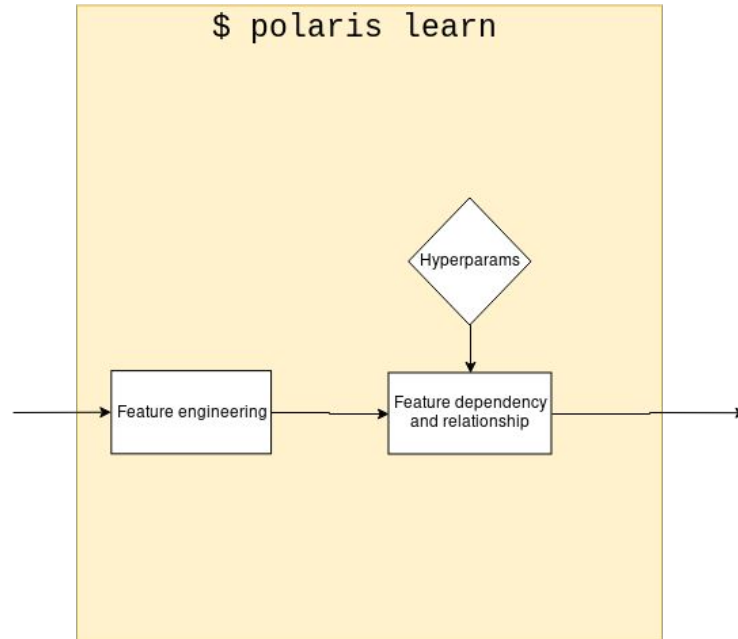
Polaris pipeline

polaris fetch

polaris learn

polaris viz
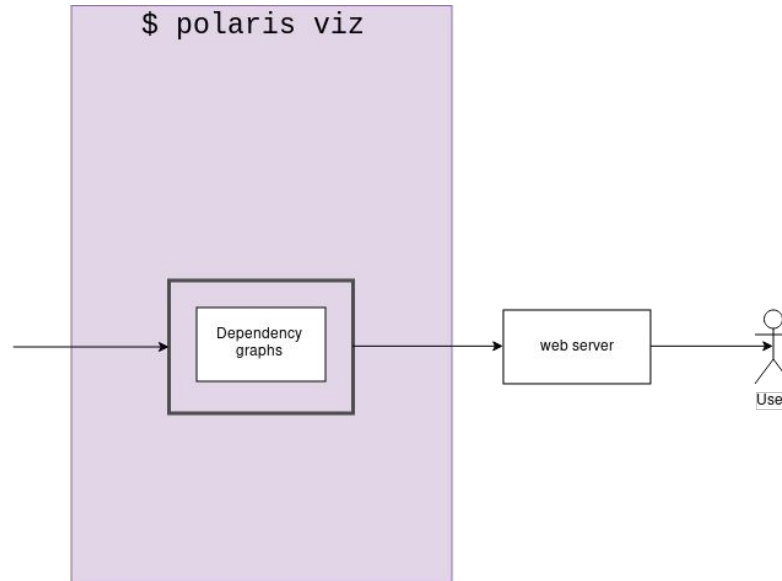
Demo: LightSail-2 telemetry analysis

https://deepchaos.space/
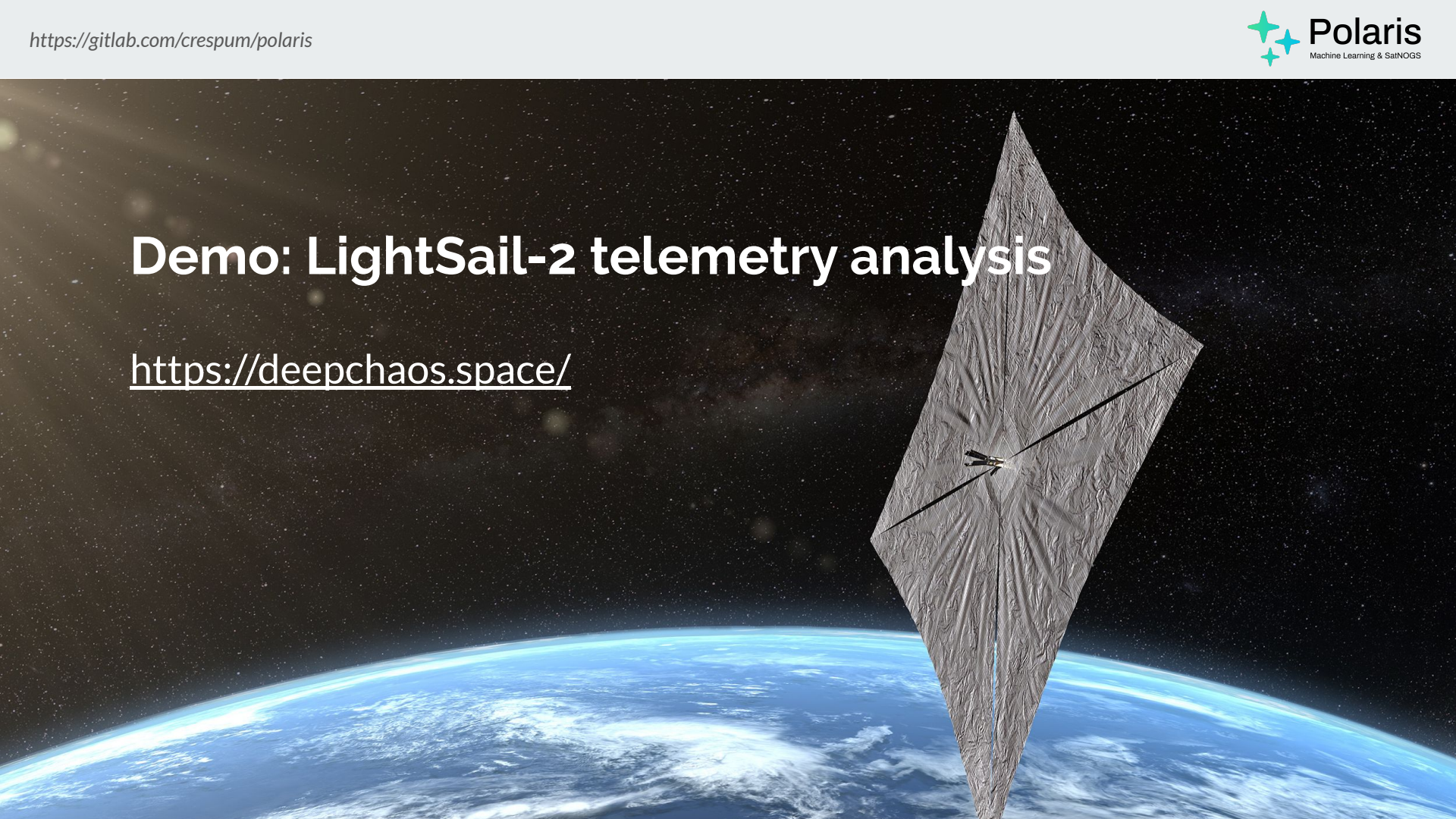
Next steps
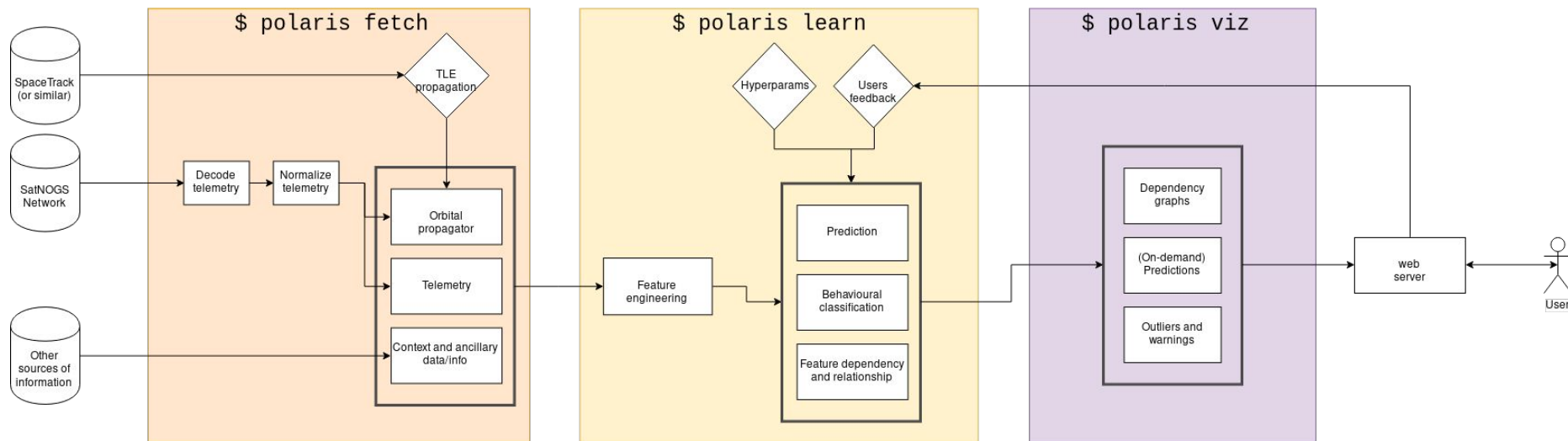
Conclusions

- We have already found interesting things with fairly simple analysis
- We will need to collaborate with satellite operators to validate the results
- Bigger constellations will yield even better results

"Polaris can be used not only for automating operations, but it can also find deeper relationships and run more complex analysis than what a human would do"

Want to contribute?

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📢 riot.im/app/#/room/#polaris:matrix.org

🔍 gitlab.com/crespum/polaris / LGPL v3