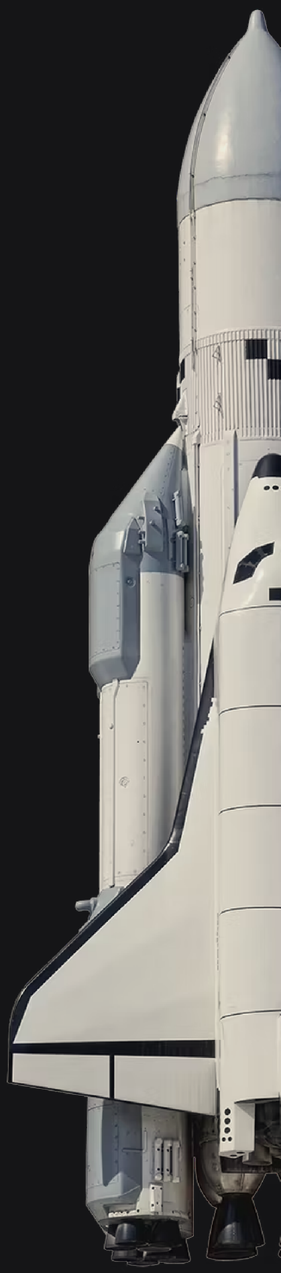
By
Oquirrh Labs

LabLab SpaceExploration AI Hackathon

TriRed LM

1 —

Bringing Reliable AI Decision Support to Space Missions



The Challenge

*Every space mission faces a **critical** constraint*:
when something goes wrong, Earth is minutes or hours away.

- Memory corruption from cosmic radiation can lead to hallucinations
- Traditional LLMs provide no warning before degradation
- No mechanism exists to verify response accuracy

The Cost of Failure:

- Incorrect AI guidance could cost billions in equipment
- Human lives depend on reliable AI assistance
- No room for error in deep space operations

Consider the Mars Rover: A single cosmic ray could corrupt an LLM's memory, causing it to provide dangerous guidance during a critical maneuver. With a 40+ minute roundtrip to Earth for instructions, the damage would already be done.

2 —

Market Size

Total **A**ddressable **M**arket

$600B *by 2030*

Space AI/ML market\ to grow at 22.5% CAGR

Serviceable **A**ddressable **M**arket:

$150B

Spacecraft autonomy systems and satellite

Operations

Initial **T**arget **M**arket:

$20B

Earth orbit missions

Core Technology

Distributed Resilient Intelligence

Triple Redundancy approach

- Three independent AI agents cross-validate decisions
- Consensus-based response generation
- No single point of failure

Space-Optimized Design

- Lightweight models optimized for space hardware
- Operates within strict resource constraints
- Designed for radiation-hardened systems

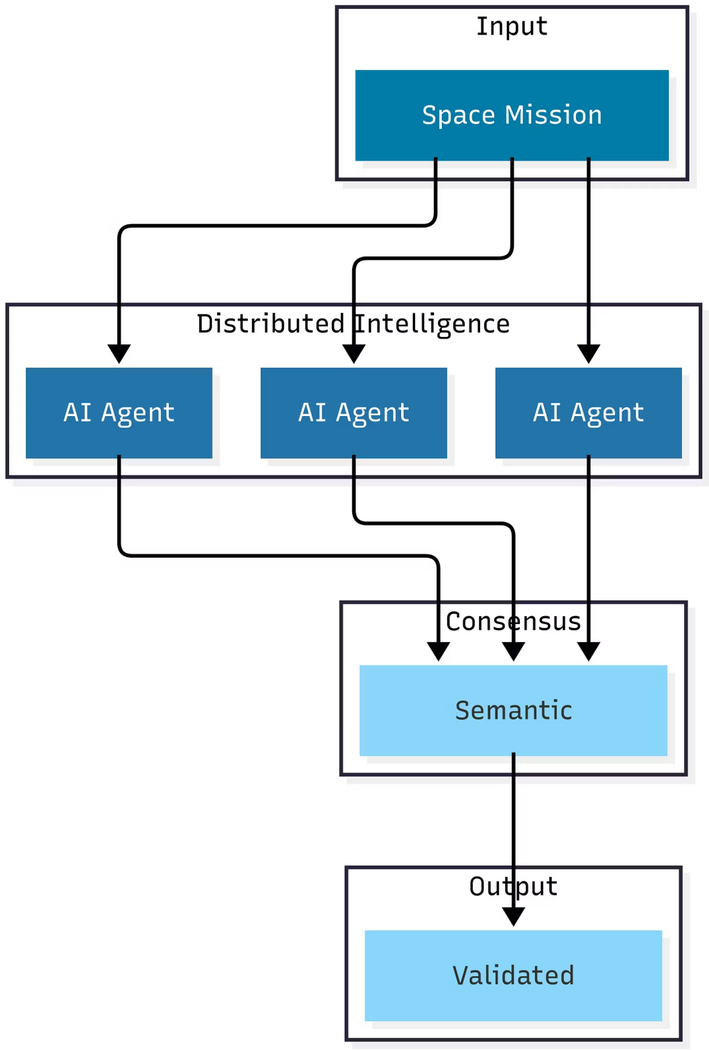
Knowledge Integration

- Real-time integration with spacecraft
- Comprehensive space operations knowledge base
- Continuous learning from mission data

Technical Deep Dive

TriRed LM agentic framework guarantees that the system always has a set of nodes online, which leads to consistent progress and trustworthy responses.

Uses Lightweight consensus algorithm and high accuracy similarity search Algorithm



Competitive Advantage .

Triple redundant architecture

VS

Single Point of Failure

Fully autonomous space optimized agent

VS

Requires constant Earth connection

Lightweight deployment

VS

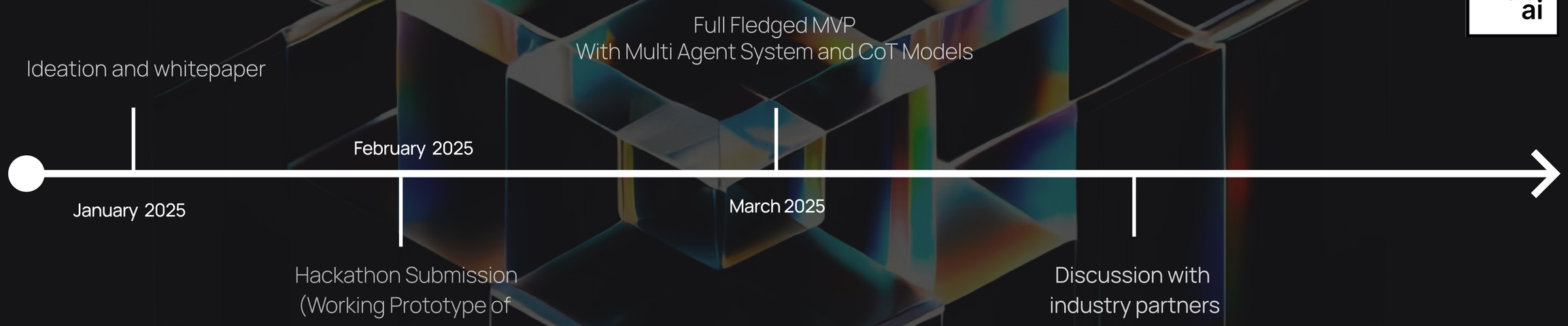
High resource requirement

Graceful degradation

VS

Binary (working/failed) states

Milestones



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Meet the Team At Oquirrh Labs

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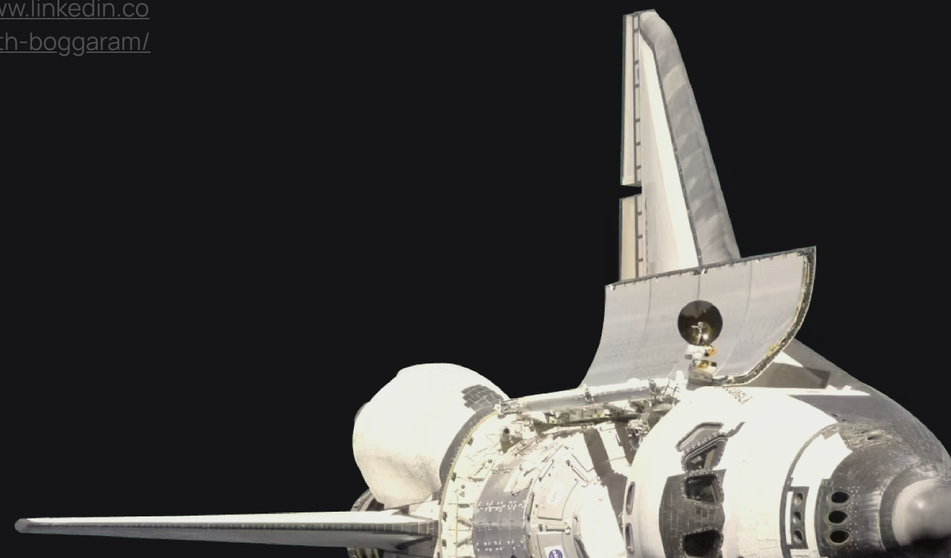

Pitch

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