



# CELESTINE

## Intelligent Navigator for the Universe & Earth

Powered by Gemini 2.5, Google Maps Platform & Google Cloud

by Veronika Kashtanova





# Problem: STEM Education is Static

Addresses UN SDG 4 (Education) & SDG 9 (Innovation)

## Limited Access

High-quality space education is often expensive or confined to static textbooks

## The Disconnect

Students struggle to visualize complex cosmic data.  
There is a gap between abstract NASA data and real-world understanding

## Forgotten Dreams

"Space Mode" features in mapping tools have faded, leaving behind static images without interactivity

Making cosmic exploration deeply personal, interactive, and intelligent





# Celestine: An Intelligent Co-Pilot



## Multi-Modal AI

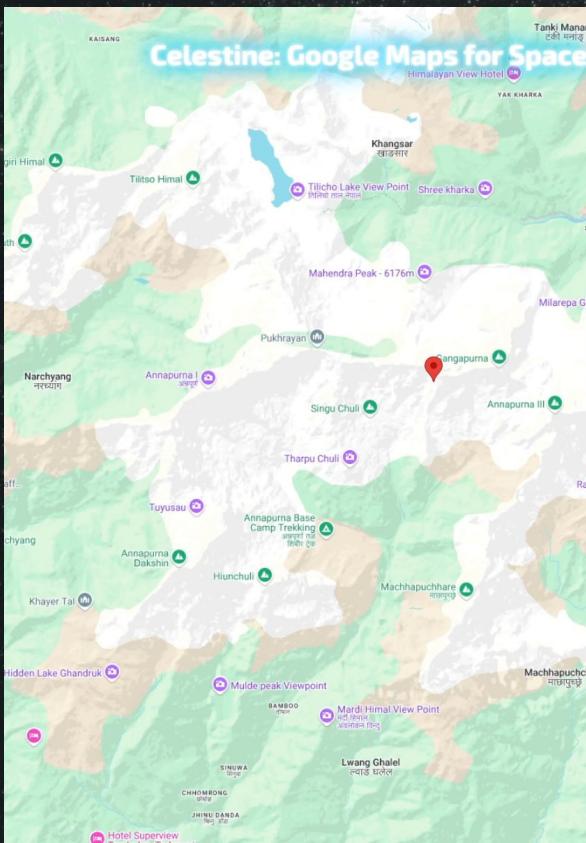
Engage with an AI guide via text, voice (ElevenLabs), or a live video avatar (Tavus).

## Planetary Analogues

The AI doesn't just recite facts. It uses Gemini 2.5 to reason about geological features (e.g., "shield volcano on Mars") and uses the Google Places API to find terrestrial counterparts on Earth (e.g., Mauna Kea).

## Result

A seamless loop connecting alien worlds back to our reality.



Space AI Agent



You:  
Go to Moon.

Agent:  
Initiating landing sequence for Moon. Stand by.

You:  
I'm looking at Olympus Mons on Mars. It's a Shield Volcano.  
The description says: "The largest volcano in the Solar System; a huge shield volcano." Based on this, what are some of its analogues on Earth?

Agent:  
Based on the features of Olympus Mons, a notable Earth analogue is Medicine Lake in California, which is also a shield volcano.

You:  
I'm looking at Maxwell Montes on Venus. It's a Mountain Range. The description says: "The highest mountain range on Venus, possibly formed by tectonic processes." Based on this, what are some of its analogues on Earth?

Agent:  
Based on the description of Maxwell Montes as a large mountain range formed by tectonic activity, the Himalayas are a good Earth analogue. They are the highest mountain range on our planet, formed by the collision of the Indian and Eurasian tectonic plates.



# Cloud-Native Architecture

## 1 Frontend

React + Vite,  
Three.js (3D  
rendering)



## 2 AI Orchestration

Python (FastAPI),  
Google Agent  
Development Kit  
(ADK), Gemini 2.5 Pro



## 3 Geospatial

Google Maps Platform  
(Maps JS, Places API,  
Photorealistic 3D Tiles)



Technologies

## Cloud Infrastructure

Docker, Cloud Run, Cloud Build, Secret  
Manager, Artifact Registry, Firebase  
Hosting





## Celestine's user





# Impact & Vision

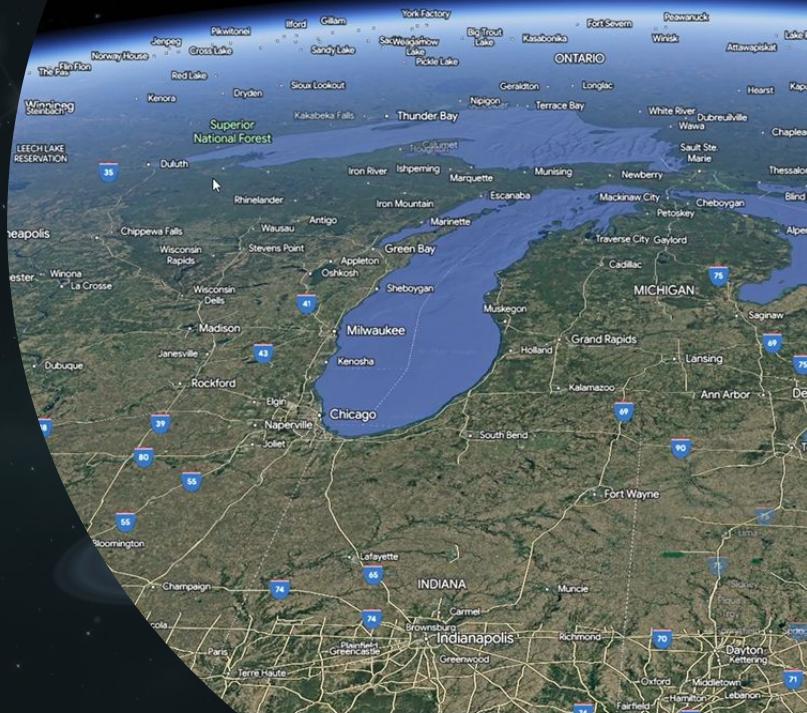


## Building the Next Generation of Explorers

- Democratizing Data: Turning terabytes of scientific data into storytelling.
- Scalability: The agent-based architecture on Cloud Run is ready to serve students globally.
- Roadmap: Integration of Routes API for geological tours, Street View, and upcoming Project Astra capabilities.
- Sustainability: Operating on a Freemium B2B2C model tailored for the global EdTech market.

It's a map. It's a guide. It's the start of humanity's new interface with the cosmos.

Celestine: Google Maps for Sp





# Nominee: Google Maps Platform

Google Maps Platform    Why Google    Products    Solutions    Pricing    Resources    [Contact sales](#)    [Get started](#)

The screenshot shows the Google Maps Platform website with the "Celestine" project highlighted. The project title is "Celestine: An AI-Powered Navigator for the Universe (Google)." It includes a thumbnail image of a white rover on Mars, a video player, and a "HIGHLIGHTS" section with a preview of the interface. To the right, detailed project information is provided: Category (AI), Key Features (Maps JavaScript API, Places API, Gemini API, +8), and a description of the AI's ability to identify terrestrial analogues for celestial points of interest.

Celestine

By Veronika Kashtanova

V Celestine: An AI-Powered Navigator for the Universe (Google) ... visited Volcanoes Смотреть Поделиться

Tharsis on Mars

Посмотреть на YouTube

CATEGORY • AI

KEY FEATURES Maps JavaScript API Places API Gemini API +8

Inspired by Google's past "Space Mode" experiments, this project revives the dream of cosmic exploration with an intelligent co-pilot for the Solar System. It aims to make space personal, interactive, and intelligent, moving beyond static images to offer a dynamic journey through the cosmos.

Starting as a 3D solar system viewer, the application evolved into a multi-modal, AI-driven exploration platform. It allows users to navigate a 3D model of the solar system, "land on" planets to view points of interest, and engage with an AI agent via text, voice, or video. A key innovative feature is the AI's ability to use Google Maps Platform tools: when a user clicks a celestial point of interest, the AI identifies terrestrial analogues using the Places API, displaying them on an interactive 2D Earth map to connect alien worlds to our reality.

HIGHLIGHTS

Visited Volcanoes Tharsis on Mars



# Recognition

Featured Project on DEV.to  
Community

## Thanks!

Do you have any questions?

[github.com/vero-code/celestine](https://github.com/vero-code/celestine)

[vero-code.website](https://vero-code.website)

[x.com/veron\\_code](https://x.com/veron_code)

DEV Community @ThePracticalDev · Dec 29, 2025

Celestine: An AI Navigator for the Universe. Explore planets in 3D and "land" on them using Gemini and Google Maps.

An entry for DEV's Worldwide Show and Tell Challenge Presented by [@MuxHQ](#)

{ author: [@veron\\_code](#) }

Celestine: AI Navigator for the Universe

From dev.to

1 comment 7 shares 26 likes 2.8K views