Project 2 Ideation James Webb Telescope Feed

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Brief Project Description

This project envisions a website dedicated to provide the latest observations and discoveries captured by the James Webb Space Telescope (JWST), sourced directly from the Mikulski Archive for Space Telescopes (MAST) database. It aims to serve as an interactive and educational portal where users can explore high definition visuals of galaxies, stars, planets, and other celestial phenomena. Each image will be accompanied by detailed information, including the scientific insights it provides, the specific JWST instruments involved in its capture, and other technical data.

This website is designed to be both educational and engaging, enabling users of all backgrounds to view and learn about these discoveries.

Why it would be a fun project

This project has the potential to serve as an invaluable educational tool that makes complex astronomical data accessible and understandable to a wide audience. It bridges the gap between advanced scientific research and public interest while providing an immersive learning experience that can inspire the next generation of scientists, astronomers, and curious minds.

In addition, I believe that working on a project that encompasses data management, UI/UX design, API integration, and real-time processing presents me with a wealth of learning opportunities and technical growth.

Tools & Technologies

Frontend:
The tools used for the frontend involves React.js with TypeScript for a dynamic and responsive user interface.

Backend:
FastAPI will be used for the backend to efficiently handle API requests to the MAST database, and caching mechanisms to optimize response times for frequently requested data.

Database:
Will be using a NoSQL database such as MongoDB to store complex metadata structures that can vary for

each image or observation without the need for a rigid schema. MongoDB is the preferred choice due to its flexibility, scalability, and ability to handle large volumes of structured and unstructured data efficiently.

API Integration:

Utilizing the MAST API for fetching the latest JWST images and metadata.