EMBIGGEN YOUR EYES

Research Paper Title:

Innovative for space science and exploration

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Team: Galaxies Of Dreams

Abstract

Our website project displays space exploration in a simplified and approachable way, striving to make the vast volume of high-resolution, multi-gigapixel imagery generated by NASA missions more attainable. These massive datasets are often hard for researchers and the general public to explore with current tools, possibly hindering new discoveries and public interest. We've designed a responsive

web-based application that allows anyone to easily navigate through the solar system and learn about each planet. The application handles gigapixel data quite well, providing the user with a seamless experience. Our initial prototype shows that it's possible for the app to lower the barrier to entry for non-professionals but still offer competent navigation tools. We believe this is a positive step towards democratizing access to space data and bridging the gap between highly advanced telescopes & technologies and people. We plan to keep iterating on the app based on user feedback to add more sophisticated features.

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1. Introduction

We're building a responsive solar system app, Galaxies Of Dreams, with the goal of bringing NASA's vast catalog of high-resolution imagery to the world. NASA missions like the Hubble and James Webb Space Telescopes are generating a huge amount of data, but it's so vast and complex it's too much for current tools. Our app is designed to solve this problem by providing a quick and seamless way to navigate these images. Our goal is to make it easier for researchers to do their work while also sparking a sense of wonder in both children and adults as they explore the cosmos and learn about each planet.

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2. Method and Materials

The development of Galaxies Of Dreams followed a structured software development lifecycle, focusing on creating a robust backend and an easy-to-use frontend.

2.2. Development Team and Roles:

The project was executed by a multidisciplinary team:

- Team Leader (Mostafa Emad): Oversaw project coordination and vision, helped with project management and design.
- Backend Developer (Mohamed Soliman): Architected and implemented the server-side logic and image tiling system.
- Researcher/Programmer (Mohamed Salah): Conducted market analysis of existing tools and defined technical requirements.
- Video Editor (Yousef Elsayed): Created promotional and instructional materials.
- UI/UX Support (Gannah Mohamed): Contributed to front-end design principles.

2.3. Materials:

>The primary material for development and testing was a sample dataset of high-resolution space images

- **presentation:**

  https://docs.google.com/presentation/d/1q3dZE1-lVDiWIjkJ20KgujlySDDCj9qKAnUFjMPAvCU/edit?slide=id.g3844083a8a3_2_135#slide=id.g3844083a8a3_2_135

- **resources from**

  NASA:https://www.spaceappschallenge.org/2025/challenges/embiggen-your-eyes/?tab=details

- **the program we used:**

  https://code.visualstudio.com/

>Our Website:

https://mostafa1-0.github.io/GalaxiesOfDreams/

> **Some of nasa's resources:**

https://science.nasa.gov/asset/hubble/cosmic-reef-zoom-video/?utm

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3. Results

The development process yielded a functional prototype of the galaxies of dreams platform. The key results are qualitative, based on the achieved features and design goals:

- **Result 1**: successfully get a good system for the users to navigate through.
- **Result 2**: Intuitive User Interface. As envisioned, the UI was designed for ease of use ("Easy UI to Use"). The navigation controls are minimal and familiar, mimicking interfaces of popular map and photo applications. This eliminates the learning curve typically associated with scientific data tools.
- **Result 3**: A Foundation for Dual-Audience Engagement. The platform's design effectively serves two purposes: it provides a powerful, high-performance viewer for researchers needing to inspect fine details, and it offers a captivating, game-like experience for the public to explore space from their browsers.

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4. Conclusion

The challenge of exploring NASA's vast image libraries is a significant one. The Galaxies Of Dreams project demonstrates that a thoughtfully designed software solution can effectively begin to address this challenge. By leveraging a tiled-image server architecture and an intuitive frontend, galaxies of dreams provides a seamless and rapid method for navigating a simulation of the solar system to begin to understand the nasa data. **The project successfully met its initial objective of creating a platform that has the potential to facilitate research and inspire public interest in astronomy**. Galaxies Of Dreams lays a strong foundation for a tool that can bridge the gap between complex scientific data and a wide-ranging audience.

5. Recommendation

Based on the development and initial results of the Galaxies Of Dreams prototype, we propose the following recommendations for future work:

1. Back-to-back integration the NASA APIs
2. Telling all the important discoveries and info on the different cosmic objects.
3. Making scholarships with a fun curriculum studies, Making two versions (Kids & Advanced).
4. Making a free demo version on (Google play and IOS) stores.
5. The advanced version with extra subscription fees.
6. Making a timeline for the different cosmic objects.
7. Expanding into the outer space

By following these recommendations, Galaxies Of Dreams can evolve from a promising prototype into a vital resource for both the scientific community and the global public.