Cryptoverse

1. Introduction

A crypto currency dashboard that displays historical price data over the past five years is a powerful tool for investors seeking a comprehensive understanding of market dynamics. This feature-rich interface offers users a detailed historical perspective on the performance of various crypto currencies, enabling insightful analysis and informed decision-making. Through visually intuitive charts and graphs, the dashboard allows for effective comparisons of multiple crypto currencies, aiding in the identification of top performers and overall market trends. Users can customize timeframes for a more granular examination of price movements, facilitating in-depth volatility analysis and risk assessment. This historical data not only supports investors in making data-driven decisions but also assists in recognizing recurring patterns and cycles. Beyond its role in optimizing cryptocurrency portfolios, the dashboard serves as an educational resource, empowering users to grasp the evolving nature of crypto currency markets and the nuanced factors shaping price movements over an extended period.

- **Project Title**: Cryptoverse
- **Team Members**:
    - Anbumani C [Team Leader]
    - Anbarasan R [Developer]
    - Arunkumar B [Developer]
    - Avinash R [Developer]

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2. Project Overview

Cryptoverse is a sophisticated and comprehensive cryptocurrency dashboard designed to provide investors with deep insights into the cryptocurrency market. The application aims to empower users by offering a rich set of features that allow them to analyze historical price data of cryptocurrencies spanning the past five years. By providing a clear, user-friendly interface and powerful tools, Cryptoverse helps users make informed, data-driven decisions, whether they are seasoned investors or newcomers to the crypto space.

The platform is built to facilitate seamless and intuitive navigation, making it easier for users to explore the performance of various cryptocurrencies over time. It integrates advanced charting capabilities and interactive data visualization tools, giving users the ability to view trends, patterns, and fluctuations in cryptocurrency prices at granular levels, such as daily, weekly, or monthly intervals.

- **Features**:
    - Displays historical price data of cryptocurrencies for the past five years.
    - Interactive line charts powered by `react-chartjs-2` and `Chart.js`.
    - Customizable timeframes for detailed analysis of price fluctuations.
    - Seamless navigation between pages using `react-router-dom`.
    - Search feature to explore various cryptocurrencies.
    - Detailed insights into market performance and top-performing assets.
    - Educational resource for users to understand market trends and cycles.

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3. Architecture

- **Component Structure**:
  The architecture follows a modular approach, with separate components for different pages such as:
  - **Home Page**: Displays global crypto stats and top 10 cryptocurrencies.
  - **Cryptocurrencies Page**: Lists all available cryptocurrencies with search functionality.
  - **Crypto Details Page**: Displays detailed historical data and statistics of individual cryptocurrencies.
  - **LineChart Component**: Visualizes historical price data using a line chart.
  - **Redux Store**: Used for global state management, especially for handling API data.
- **State Management**:
  - **Global State**: Managed using Redux Toolkit, where the `cryptoApi` slice handles fetching cryptocurrency data.
  - **Local State**: Local state is managed within individual components (e.g., `useState` for time periods, search terms, etc.).
- **Routing**:
  React Router is used for navigation between pages:
  - `/home`: Home page displaying global statistics and top cryptocurrencies.
  - `/cryptocurrencies`: List of all cryptocurrencies with search.
  - `/cryptocurrency/:id`: Detailed view of an individual cryptocurrency.

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4. Setup Instructions

- **Prerequisites**:
  - Node.js and npm: Install Node.js from Node.js official website.
  - React.js: Install using `npx create-react-app` to set up a new React app.
  - Git: Download and install from Git official website.

- **Installation**:
  1. Clone the Git repository:

     ```
     bash
     Copy
     git clone https://github.com/Anbunque/Cryptoverse
     ```

  2. Install dependencies:

     ```
     bash
     Copy
     cd Cryptoverse
     npm install
     ```

  3. Start the application:

     ```
     bash
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     npm start
     ```

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5. Folder Structure

- **Client**:
  - `src/`: Contains all the React components, pages, and assets.
    - `components/`: Includes reusable components like charts, cryptocurrency cards, etc.
    - `pages/`: Houses main pages like Home, Cryptocurrencies, and CryptoDetails.
    - `services/`: Contains API functions, including the `cryptoApi` slice and Redux store configurations.

- **Utilities**:
  - Custom hooks and helper functions for various tasks (e.g., filtering data, handling API responses).

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6. Running the Application

- To start the frontend server locally, use the following command:

```
bash
Copy
npm start
```

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7. Component Documentation

- **Key Components**:
  - **Line Chart**: Displays a line chart representing the historical price of a cryptocurrency.
    - **Props**:
      - `coinHistory`: Historical price data of the cryptocurrency.
      - `currentPrice`: Current price of the cryptocurrency.
      - `coinName`: Name of the cryptocurrency.
  - **Cryptocurrencies**: Displays a list of cryptocurrencies and handles search functionality.
    - **Props**:
      - `simplified`: Determines whether to show a simplified list or full list.
  - **Crypto Details**: Displays detailed statistics and historical data of a selected cryptocurrency.
    - **Props**: Rapid API Key (Uses URL parameters to fetch details of the cryptocurrency).
- **Reusable Components**:
  - **Loader**: Displays a loading spinner while data is being fetched.
  - **Card**: A card UI component used to display individual cryptocurrency details

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8. State Management

- **Global State**: Redux is used for managing the cryptocurrency data:
    - **Store**: Configured with `cryptoApi` slice for managing API calls and data.
    - **Actions**: Fetching cryptocurrency data through Redux actions.

- **Local State**:
    - Managed using `useState` for state within components (e.g., time period selection, search term).

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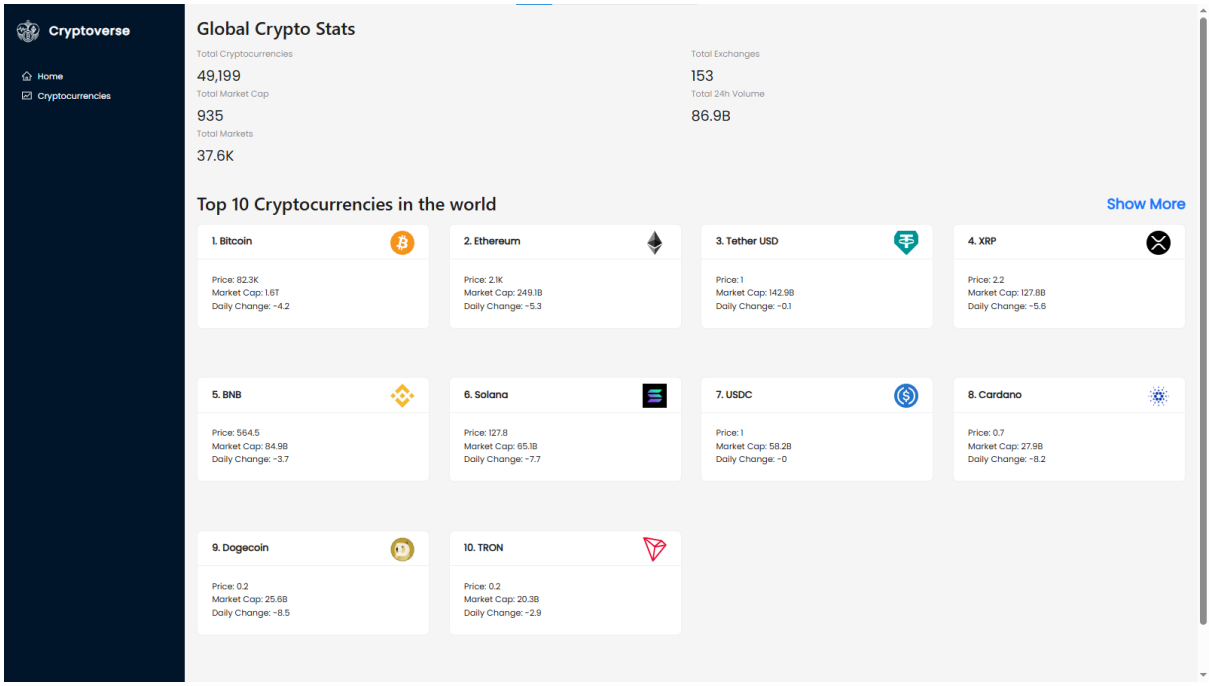
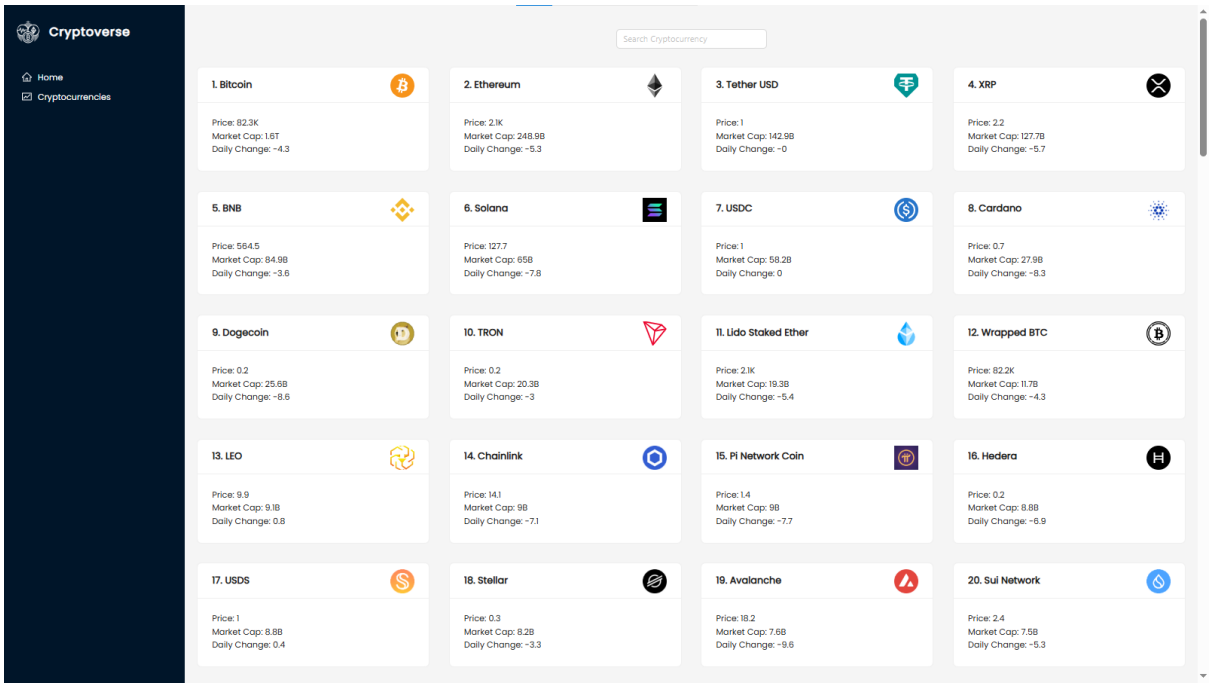
9. User Interface

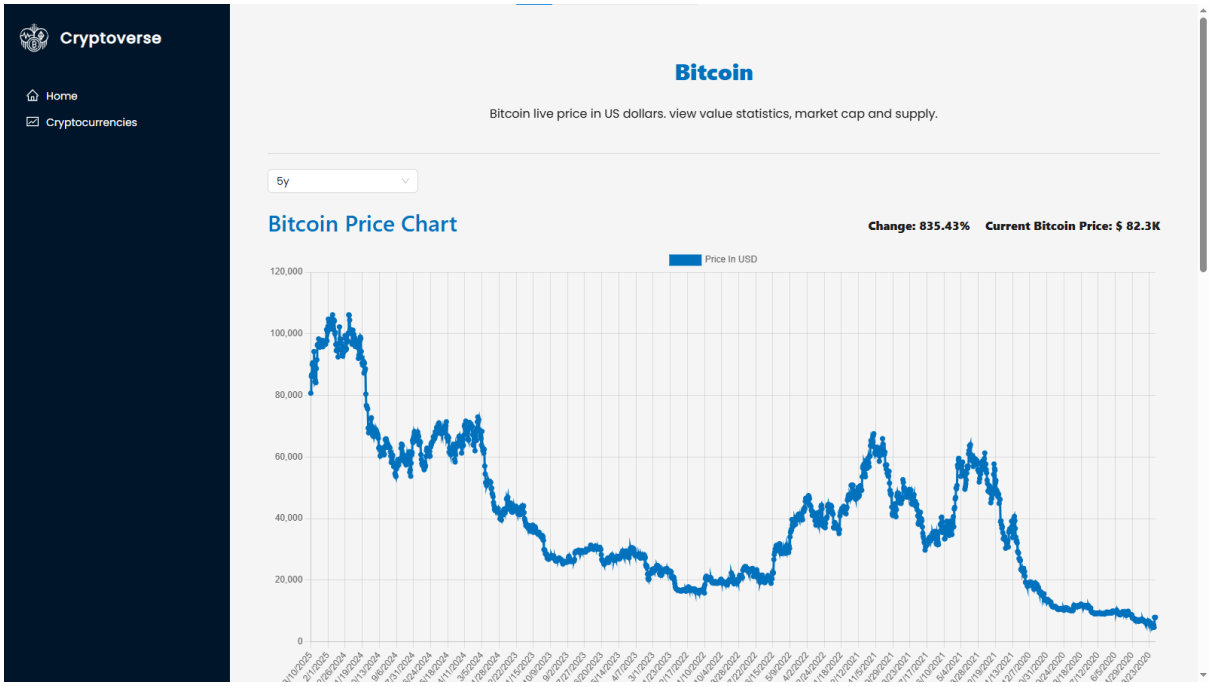
- **Home Page**: Displays global cryptocurrency statistics (e.g., total market cap, total exchanges) and the top 10 cryptocurrencies.
- **Cryptocurrencies Page**: Allows users to search and view cryptocurrencies with historical data.
- **Crypto Details Page**: Shows detailed charts, statistics, and links for each cryptocurrency



.Home Page



Cryptocurrency Page



Crypto Details Page

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10. Styling

- **CSS Frameworks/Libraries**:
  - Ant Design: Used for UI components like cards, rows, columns, and statistics.
- **Theming**:
  - Custom styles to enhance the visual presentation of charts and tables

11. Testing

- **Testing Strategy**:
  - Unit and integration tests using Jest and React Testing Library for individual components.
- **Code Coverage**:
  - Jest is used to ensure that all critical components are covered by tests.

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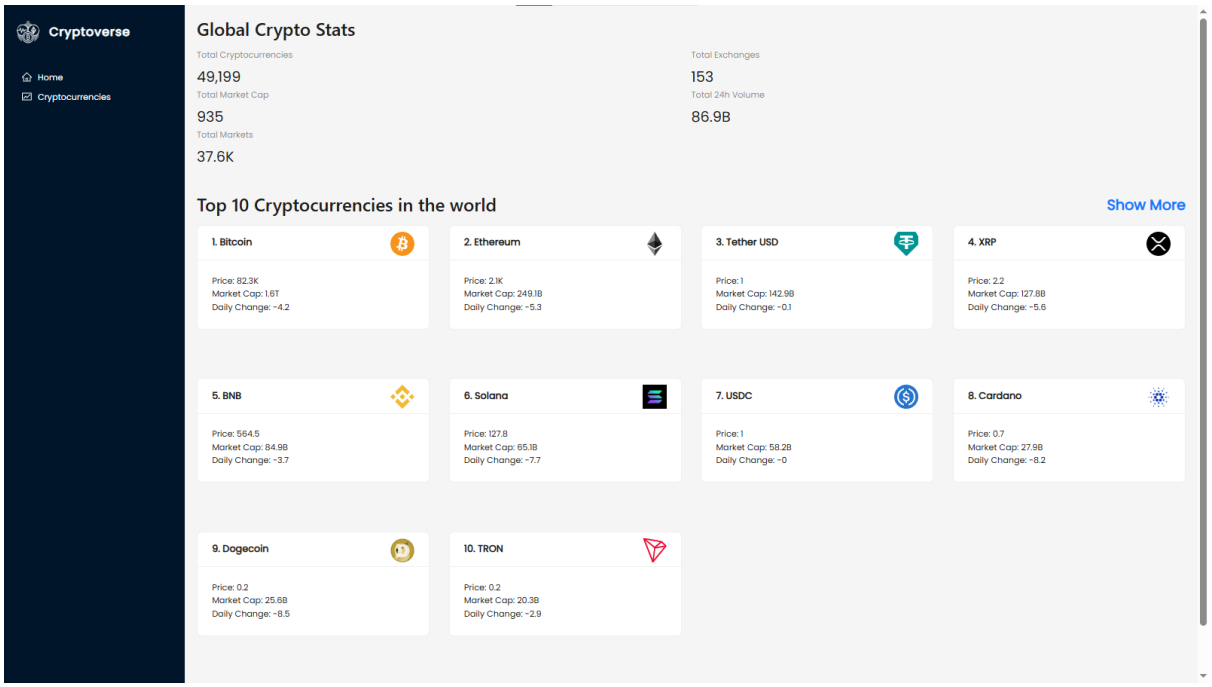
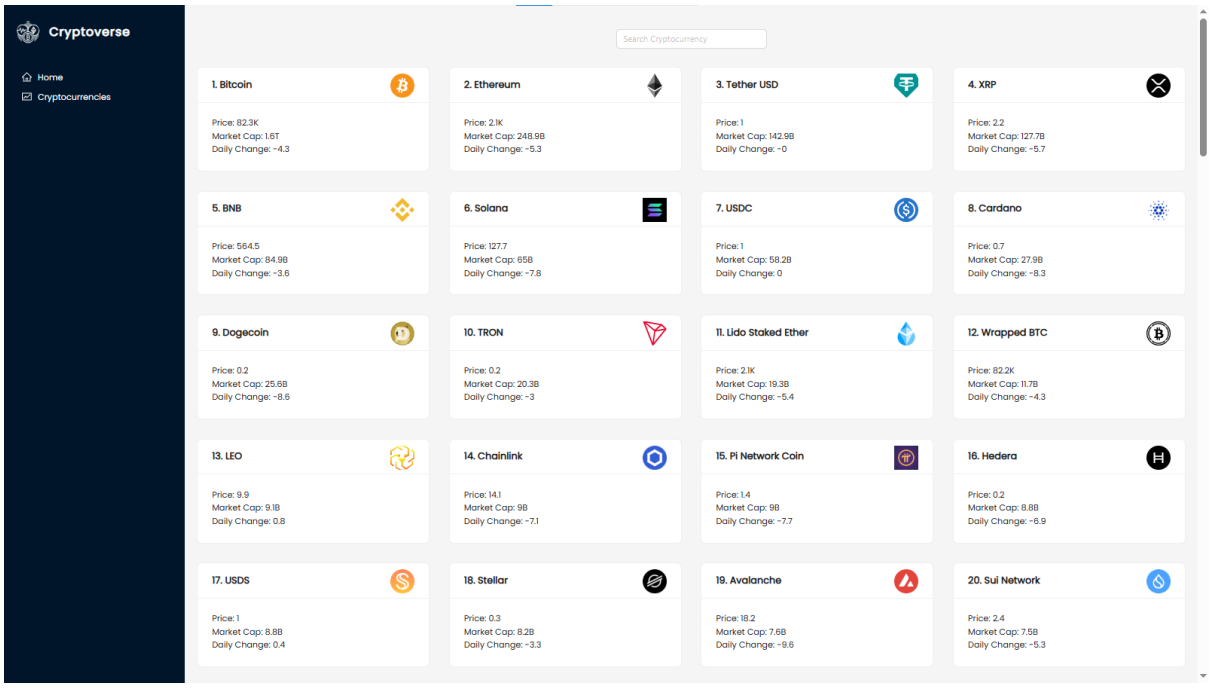
12. Screenshots or Demo

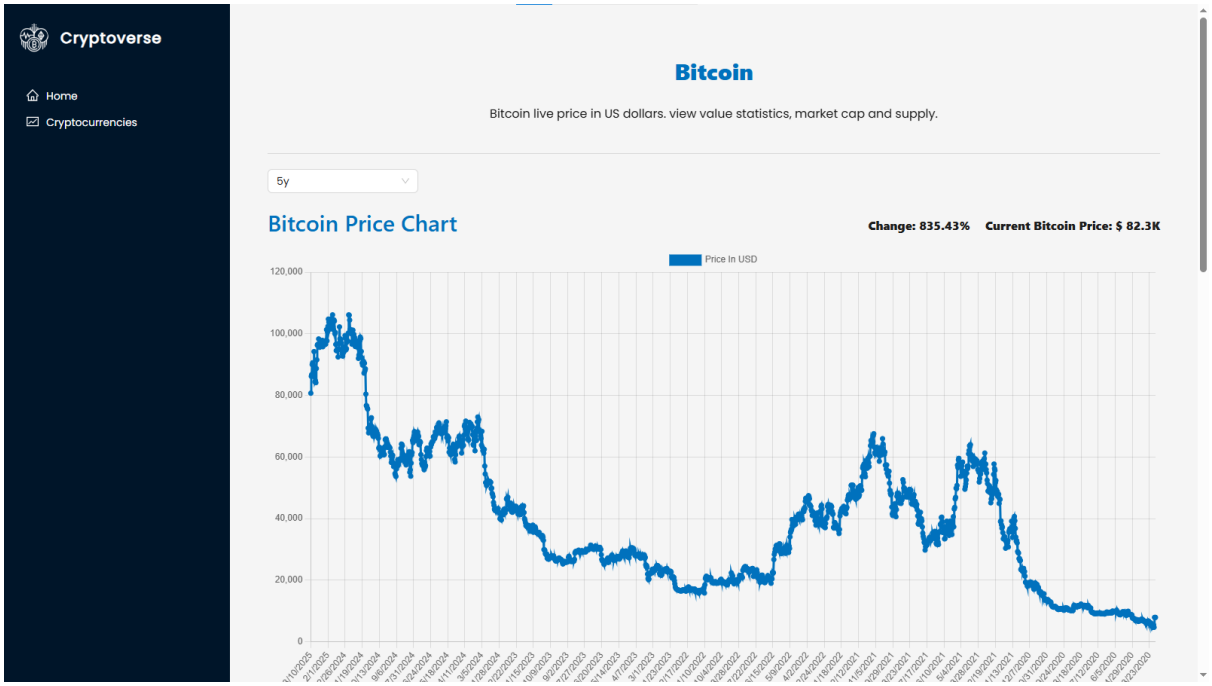
- **Demo Link**: Cryptoverse Demo
- **UI Screenshots**:
    - **Home Page**: Shows stats and top 10 cryptocurrencies.
    - **Cryptocurrencies Page**: List of all cryptocurrencies with search functionality.
    - **Crypto Details Page**: Line chart with historical data of selected cryptocurrency.



.Home Page



Cryptocurrency Page



Crypto Details Page

13. Known Issues

• **Bugs**:

o **Currently no known critical issues**:

At this time, no major bugs have been identified that would affect the core functionality of the system. However, users are encouraged to report any issues they encounter through the issue tracker for prompt attention and resolution.

o **Potential minor issues**:

While no critical bugs are present, some users might experience occasional glitches in specific browsers or devices. If this occurs, users should ensure their software is up to date and consult the FAQ or issue tracker for troubleshooting.

o **Performance on older devices**:

In some cases, users with older devices may experience slower load times or rendering issues. Our team is actively working on optimizing the application for better performance across a wider range of hardware.

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14. Future Enhancements

- **Potential Features**:
  - Add more visualizations like bar charts or pie charts for a deeper market analysis.
  - Implement a portfolio tracker for users to manage their investments.
  - Add authentication for user-specific data and preferences.
  - Enhance mobile responsiveness for a better user experience on smaller devices.

15.Conclusion

Cryptoverse is a powerful and versatile cryptocurrency dashboard that offers investors an all-encompassing suite of tools to analyze, track, and manage their investments. By providing access to comprehensive historical data, customizable charts, and real-time market insights, Cryptoverse empowers users to make informed decisions based on accurate, up-to-date information. The platform's intuitive design, combined with its interactive and educational resources, ensures that both seasoned traders and newcomers can navigate the complexities of the cryptocurrency market with ease and confidence.

With features like portfolio management, personalized market alerts, and the ability to analyze price trends over the past five years, Cryptoverse helps users understand market dynamics, identify key opportunities, and optimize their investment strategies. As the cryptocurrency landscape continues to evolve, Cryptoverse will remain a crucial tool for investors looking to stay ahead of the curve, equipped with the data and insights needed for success in a volatile market.

Overall, Cryptoverse is a comprehensive solution for anyone seeking to deepen their understanding of cryptocurrency markets, manage their digital assets, and make data-driven decisions in a fast-moving, ever-changing environment.