MedDash – Elevating Healthcare with Personalized Health Data Visualization Dashboard

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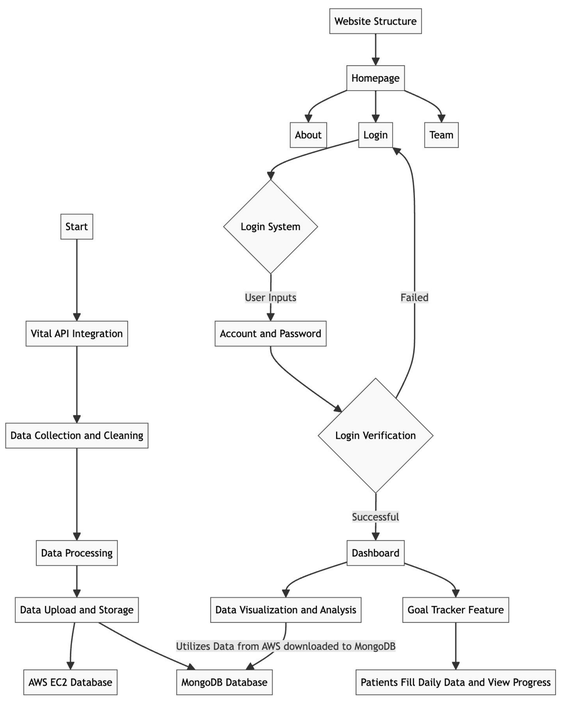
Introduction

This project targets the underutilized wealth of daily health data, aiming to transform it into actionable insights for patient care.

Unlike conventional patient dashboards, MedDash offers a highly personalized platform that allows users to delve into specific or aggregate health metrics. It seeks to bridge the gap in healthcare by introducing an innovative dashboard for daily tracking. This tool not only enables users to easily visualize and monitor their health data to identify normal and abnormal patterns but also provides clinicians with a detailed daily health profile of patients, enhancing traditional medical assessments.

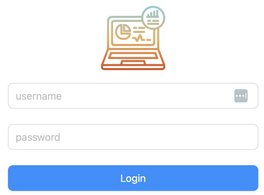
The importance of this initiative lies in its ability to make everyday health data a pivotal resource for both patients and healthcare providers. By uncovering patterns and anomalies, the dashboard fosters patient self-awareness and supports more informed clinical decisions. This approach represents a shift towards patient-centered care, positioning daily health data as a crucial element in diagnosing and crafting treatment plans.

Architecture

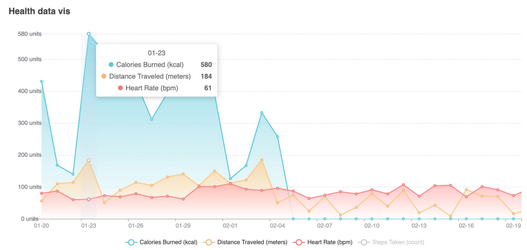


Results

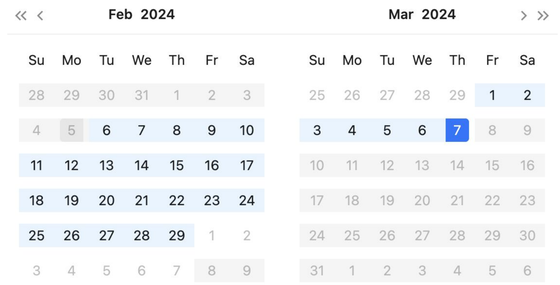
We start with Vital API Integration for data collection from wearables, followed by cleaning and processing. The clean data is uploaded and stored in our cloud AWS EC2 and MongoDB servers. The website structure includes a Homepage with sub-pages: About, Login, and Team. Post-login the Dashboard becomes accessible,featuring Data Visualization and Analysis and a Goal Tracker.



As the data privacy is very important, the login system is enforced when users want to access their own health data. Once all inputs are correct, clicking the "Button" will direct the user to the corresponding dashboard page.

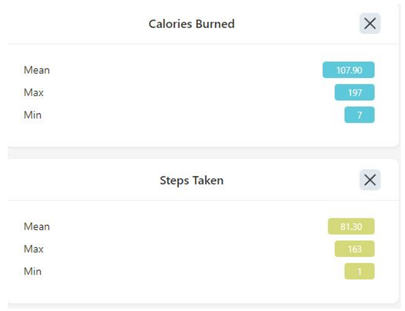


Dashboard page defaults to displaying the visualization of all health data. User can also choose to view other subpages through the sidebar on the left. This allows us to leverage React EChart's flexibility and compatibility with our existing stack. By adopting React ECharts, we aim to make visual analytics more accessible while reducing software costs.

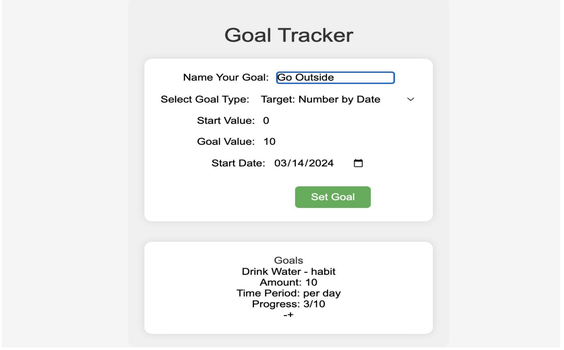


DatePicker component aims to help users to select specific time period to view the graphs of health data within this period.

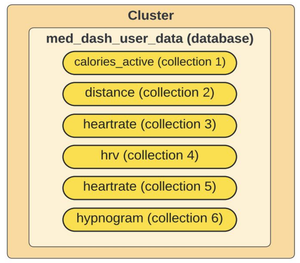
Results



Cards component aims to help both users and doctors to look at the detailed and important information about the health data, and it is flexible to show the data as needed.



We added a health habit tracker in order for patients to track goals that wouldn't be tracked otherwise. This allows patients to set goals such as drinking a certain amount of water per day or getting exercise a few times a week.



We employed MongoDB as the database foundation for our data pipeline, facilitating the extraction and loading of data via the Vital API. Our database structure includes six distinct collections, all consolidated within a database entitled "med_dash_user_data". This arrangement is meticulously supported by a cron job hosted on AWS, ensuring efficient data management and real-time processing.

Challenges / Future Expansions

- At present, our system employs dummy accounts for user login purposes. Looking ahead, patients can create their own username and login based on their needs.
- Ethical considerations in regard to legal and social-related data integration problems as manipulating biometric data is very sensitive and personal.
- Because of privacy related concerns, we did not have much data to work with. Currently all source of data are randomly generated by api from Vital.
- Next step: incorporating more functionalities to the medical dashboard such as journal entry, predictive analytics and real-time health alerts.
- Getting more feedback from patients/users will help us determine what features are helpful.

Conclusion

- The multiple sources of data are able to be consolidated into a single dashboard in a static manner.
- We were able to create a personalized, interactive, and explanatory dashboard for a single user with login functionality.
- Health data for patients can be visualized with the flexibility to select specific dates.

Acknowledgements

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QR Code

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