

Refining and Expanding Duke's Wearable Infection Detection

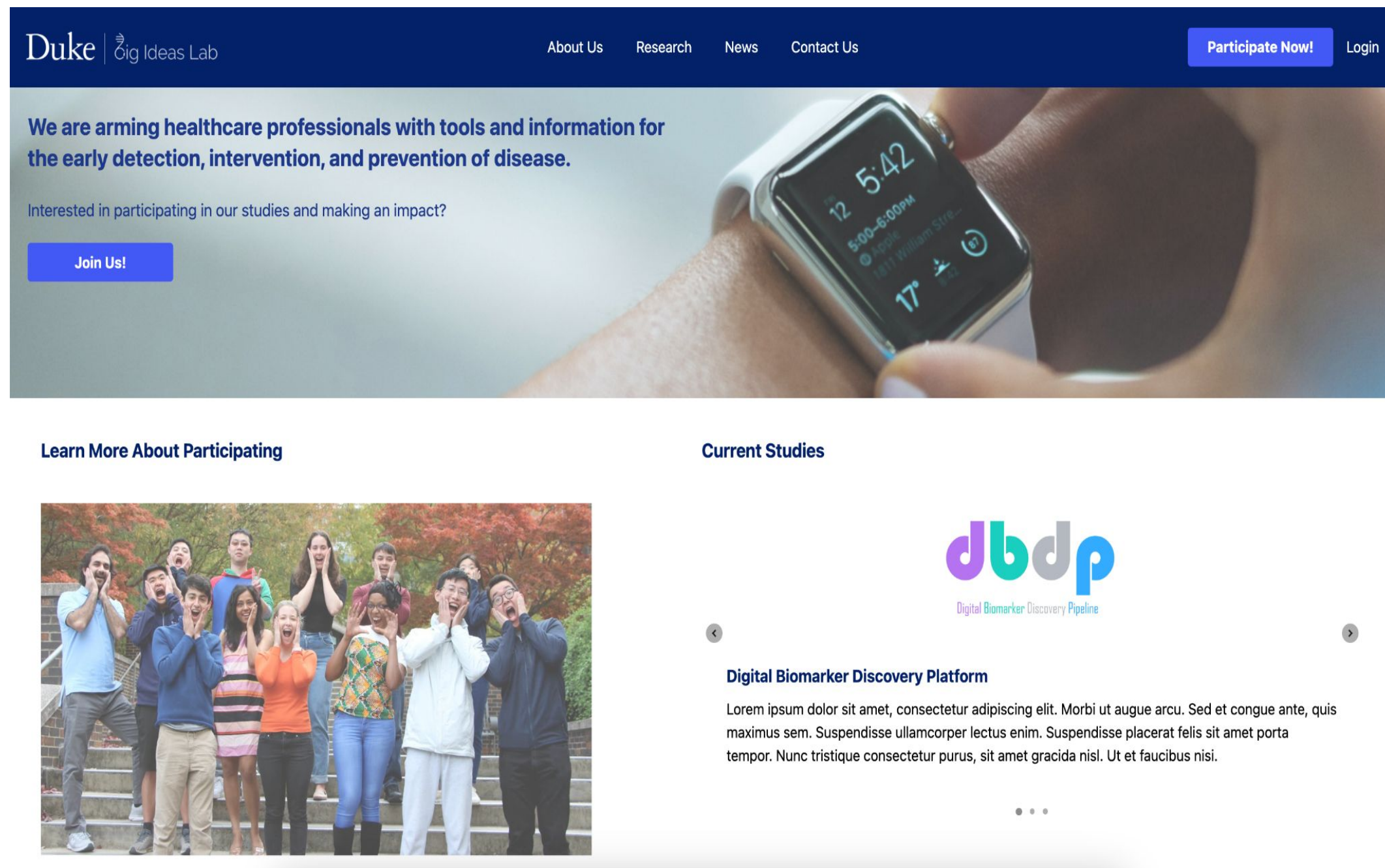
Background

Wearable devices offer significant potential for improving individual and population-level healthcare. Streamlining data collection from third-party platforms can be expensive and difficult.

Goal:
Develop API endpoints to collect data from commercial wearable devices such as Garmin and Fitbit, as well as improve front-end web functionality

Website Design

- The front end of this website is built with Svelte, utilizing the power of Tailwind CSS for styling. On the backend, FastAPI is employed to handle the server-side operations.
- SQLAlchemy's object-relational mapping (ORM) is used to construct database models, filter desired data utilizing query and filter packages, and create CSV exports for front-end user downloads.
- After login, the server generates a JSON Web Token (JWT) containing user information and sends it to the client's browser which will store this token locally in a cookie. Upon every API request, the server validates the token to ensure authorized access.



Garmin Authorization

- Big Ideas Lab backend redirects users to Garmin authorization web page.
- User provides credentials to Garmin Connect account.
- Garmin authenticates user and redirects browser to Big Ideas Lab dashboard.
- Garmin provides user access token.
- Backend stores user access token and uses token to request data from Garmin's API.

Future Work

- Deploy web app on a remote server and store data on cloud database.
- Finish backfill process for historical data.
- Test machine learning model on fetched health data.
- Test scalability and ease-of-use.

Engineering Goals

- Reformat the website layout to improve user experience and navigation.
- Implement Oauth1 authentication to securely connect with Garmin and Fitbit wearable devices.
- Develop API endpoints for Garmin and Fitbit to collect and store user health data in our database.

Integration

