BI-WEEKLY REPORT IV

Project: Well-Being Data Anonymisation with IOS

Client: GOSH

Team 33

Paul Lin, Lishen Chen, Karunya Selvaratnam

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University College London

Computer Science Department

Project stage: Final sprint of developing stage

Project description:

Develop a mobile phone app and a way of representing data arising from app usage.

Enable:

- Track Steps Data
- Display the steps data on a graph
- Predicts User Wellbeing
- Prompts User to adjust Weekly Score on Wellbeing
- Prompts User to Contact Friends if Immobile for 2 days
- Prompts User to contact friends if haven't spoken in a week
- Prompts User to take a walk if haven't walked for 1000 steps in a day
- Wellbeing score that can be anonymize and exported and stored in a server anonymize and exported and stored in a server
- Exported data that must then be used to calculate the well-being for the corresponding out-bound area and placed on a heat-map

Should

- Be able to share the users data/progress (graphs) as an image in a text message
- Be able to export the users data/progress as PDF
- Links within the app to sponsor contacts
- Ask the users permission to start the tracking

Could

- A way to get minimum number of steps inputted
- Pre-composed messages where the user can select options, I.e. who they want to contact, where they wish to go, when to meet … etc.
- Page to get existing user contact details within the phone into the app

Overview

For the past two weeks, our team has been finalising the functionalities and the UI of our prototype, in accordance with the version Joseph has shown us on the at the start of January.

In the first week, we've divided the task between us. Karunya has been updating the UI in line with the Figma design. This includes changing colours, components styles, page transitions, and setting constraints to ensure compatibility of the UI across the range of different IOS devices.

Paul has completed a list of backend functionalities, which includes initialising the app to different views after users have completed setup, creating notifications on specific dates and time for the weekly nudges, predicting wellbeing score using Joseph model, etc.

Lishen has been working on generating image report based on the graphs, and formatting data in JSON in preparation for server export.

In the second week on Tuesday, we gave a 30-minute demonstration of our prototype to Joseph, after which we received feedback, and clarified some details which are unclear in relation to page transition, sharing, and additional requirements.

Since we have implemented most of the features in our app, we are now focusing on any parts that are missing from the original design. For example, this week we have been focusing on implementing the Local Differential Privatisation algorithm which will ensure the users privacy is protected, i.e. even if the server where all the data is collected is to be hacked, it will not be possible to figure out a lot of information about an individual user. As well as making the LDP algorithm, we will also be sending the data that is collected on our app in JSON, following FHIR standards to a remote linode server.

Completed tasks

- Make the backgrounds the right colour
- Make All UI Components Look like figma style (buttons, UI Scroll Views)
- Set Constraints for all components
- Fix transitions between pages (Including bugs eg. Fix infinite pages)
- Get app initialized on home page after setup is complete
- Create Notification on a specific day of the week at a specific time
- Predict Wellbeing score with the formula : [(actual steps/target steps) + (actual calls/target calls)] / 2 * 10.
- This notification leads to the wellbeing score predicted
- After start tracking is pressed, create a default integer accumulator array for steps and calls for the past 12 weeks.
- Before alert to rate wellbeing score appears, run a function to update all steps and calls history, noting that after first time setup, there is no need to do this update since no data collected yet
- If wellbeing score is inaccurate, jump to scroller where wellbeing is rated
- Fix concurrency bugs.
- Storage of wellbeing data.
- Making Setup Transition to initial wellbeing score rating.
- Set permissions request to first Setup VC
- Fixed bug: Weekly steps sometimes doesn't get the first time due to asynchronous HealthKit execute query, periodically fetch with BG fetch
- Link past steps and calls data to graph
- Fixed Calls and Steps Mixup
- Screenshot Wellbeing Diary and store photo so it's directly accessible through code
- JSON data created
- Weblink function completed

Reviewing rate of progress

Most of the tasks on the plan was finished on time.

Identifying problems to be resolved (next 2 weeks)

- Link Settings to setup page
- 2 graphs page with share button linking to the question page

- Link graph images to Message attachment (Store images in a defaults variable)
- Apply Local Differential Privacy to Shared data
- Export JSON to server from the app
- Set up weblinks

Next steps (next 2 weeks)

Another finalisation that has to be made is in terms of the UI, where a share button needs to be implemented so that it connects to a page that has already been made, having a page with both graphs on there and connecting the settings pages to the choices the user has to make in the beginning.

As we have nearly completed a lot of our must and should parts of our requirements list, we will be attempting to complete the could parts, such as fulfilling more of the requirements that have been added on in our weekly meetings with our client.

As well as that, as our app is a place in which data is created, we will be passing this data into a GANs network which will then create synthesised data, i.e. data that is representative of the population. Our first steps to doing this is to create fake data ourselves so that we can then build a GANs into which we can then feed this data into.