The Brain Project

DOSSIER

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ABSTRACT

This semester marked the second of the *Brain Project* working in conjunction with Dr. Jill Bolte Taylor. Made famous by her TED talk about how she, as a neuroscientist, studied her own stroke while she had it that also propelled her to being one of TIME Magazine's people of the year, she now tours the country promoting brain health. A big part of this is a series of large brain sculptures painted and decorated by local, Indiana artists which currently are on display at Indiana University, Bloomington. Some will be coming to Butler's campus in the next few years. Butler's EPICS program was commissioned to develop a mobile companion app for the sculptures. For the last two semesters, the team has subsisted of two sub-teams which have each either worked on an Android and iOS version of the app.

The biggest change this semester was a complete overhaul of the UI and framework of the app, due to the team deciding to move away from two individual native apps and towards one cohesive product. It now has an Apache Cordova based framework and is unified across both iOS and Android. In terms of individual projects by the teams, each began to work on a series of mini-games that will eventually be integrated into the app. There is still a lot of work that needs to be done, however the app is certainly still on track and is ready to be handed off to the next team to work on it.

IMPLEMENTATION & DESIGN

Our goal was to design and start development on an application for the iPhone and Android that allows users to interact with Jill Bolte Taylor's Brain Project. To do this, we worked together as two teams where each team focused on implementing the application design for each respective platform. When a user downloads the application for the first time, they are required to create an account. The account they create is then stored on an open source Parse backend using the Parse API that is hosted on Butler's server. This account will reference all of the individual user information obtained through using the application. One feature of the app is a "brain quiz" that features characteristics about the user's brain, and allows them to compare their brains to local, national, and international celebrities. The other main feature of the application is the ability to display characteristics and information about each specific brain. Our team is using Estimote Bluetooth Low-Energy beacons that will be attached to each brain sculpture. The application searches for the BLE signal to determine when the user is near a particular brain. When the device running the application successfully recognizes a Bluetooth signal, the application transitions to a menu featuring several brain game categories such as pattern matching and reflex. When the user selects a category, they are presented with the first game of the respective category. Completion of a game will result in receiving a score based on completion time and/or correctness of each challenge. This score will be stored in the backend and used to compare with the scores of other users. Successful completion of a game in a particular category will unlock more games in that same category. The overall design of this application aims to immerse people in the Brain Project, and incentivize them to visit and learn about each and every one. The games are meant to be thematic in regards to the brain sculptures, and to promote knowledge and brain health.

FUNCTIONALITY

The app is structured into four panels: Artists, Brains, Games, and Quiz. The 'Artists' and 'Brains' panels are simple list view pages that allow the importing of information from our Parse database. These are scrollable lists that will display the main information for each piece of content that is added to the database. These activities utilize swipe to refresh, so if a user pulls down on the top of the list, the content will reload, giving them the most updated information from Parse. The 'Games' panel will allow the user to pick a mini-game from four categories: Memory, Patterns, Cognition, and Reflex. The difficulty of each mini-game is based on the number of mini-games the user has already completed in that category; the more mini-games the user plays in a category, the more difficult the mini-games in that category become. The 'Quiz' panel consists of a multiple choice trivia-style game. The user is shown a question and given multiple possible answers. The user selects an answer and is given feedback based on the correctness of the answer. The user can swipe between these four panels to navigate through content, or they can press the title for each activity at the top of the app. There is also a slide menu for users can access to find their account information and settings by swiping to the right on the left edge of the screen.

FUTURE WORK

Work on the Brain Project mobile application that has yet to be completed is rather extensive due to the ambitious nature of the project, but still absolutely within the scope of the timeline

set before EPICS. The prototype of the main application need further refinement as well as integration with the mini-games. The mini-games for each cognitive category also require refinement, conversion, and completion. The mini-games were developed as individual applications on their respective platforms, and the transition toward the cross-platform development has yet to reach them; therefore, a nominal amount of work will be required to port said Android and iOS applications. This conversion to the cross-platform model will serve as an adequate introduction to future teams assigned to this project, as it would familiarize them with an interface with which the majority of the team would likely not be familiar. Once this transition is complete, a larger team could easily divide up the remaining mini-games and complete them each on a case-by-case basis. Further integration with the iBeacon technology is also required – though the base level of implementation is largely complete, specific data associated with each location will also require integration. The good aspect of this project is that nearly all, if not the entire project, has already been planned and requires nearly no work on that front – from this point on the remaining work is merely implementation.