myPhone

Introduction

Mobile phones have become permanent fixtures in everyday life. However, the mobile phone market does not enable or encourage exploration into the device's hardware or software. This project aims to change individual's relationship with and understanding of their mobile phone.

Concept

I will study the history and technology behind mobile phones and explore the current DIY culture surrounding mobile devices. From this research I will build my own mobile phone. Using this experience, I will organize and lead workshops and create online documentation. The workshops will teach the basics of mobile phone technology through the participants building their own open source phones. The project aims to empower individuals through education so the technology feels more approachable and, if one so wishes, can stop relying on big companies to dictate their phone.

Research

Domains

A personal interest in the history and mechanics of mobile communication governs the research for this project. Additional research domains come from issues surrounding mobile phones in society today. The domain in which this project operates are as follows: mobile phone technology; DIY and maker culture; microcomputing; critical consumerism; open source; hacktivism; privacy.

Precedents

The Toaster Project chronicles Thomas Thwaites' attempt to make a electric toaster from scratch. The project began with Thwaites' observation that most of the technology that society relies on everyday began as rocks and sludge in the ground. Thwaites takes DIY to

the extreme by making his own electric toaster starting with the raw materials[1]. Thwaites' project is less about the end result and more about understanding how we start with rocks and oil and end with a plastic toaster in a store. I see a similar goal for the myPhone project; the final phone is not the product but instead the experience of building it.

Phonebloks is a conceptual phone design by Dave Hakkens. It centers around the idea of building mobile phones with interchangeable parts that can be easily removed, replaced, or changed by the user. This not only reduces waste by allowing broken parts to be easily replaced but also allows users to create a phone that suits their individual needs. On September 10, 2013, Hakkens posted his concept for Phonebloks on YouTube and within a week it had over 12 million views[2]. Phonebloks remains as a movement which documents the efforts of companies pursuing modular phones. The popularity of Phonebloks demonstrates a large interest in an alternative approach to current doctrine.

David Mellis and Leah Buechley published 'Do-It-Yourself Cellphones: An Investigation into the Possibilities and Limits of High-Tech DIY' in 2014. It explores construction and customization of "the most ubiquitous of electronic devices, the cellphone" as well as DIY practice[3]. For his thesis at the MIT MediaLab, Mellis built and used his own phone, conducted tutorials, and wrote an instructional guide. Mellis was investigating whether high tech DIY was possible and what it limitations were. One of the conclusions from this investigation is that high tech DIY depends heavily on middlemen, like the hardware supply company Adafruit. This conclusion manifests in DIY phones that were commercially produced in the years following Mellis' publication, like the RePhone by Seeedstudio and the recently launched PiTalk by SB Components Ltd.

Impetus

This project is shaped by personal interests and a desire to improve my skills surrounding communication technologies, mobile phones, microcomputing, coding, and DIY. This project presents an opportunity to improve skills with Raspberry Pi and Python along with increasing

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[1] Thwaites, Thomas. Thomas Thwaites: How I built a toaster -- from scratch | TED Talk | TED.com. November 2010. Accessed May 09, 2017. https://www.ted.com/talks/thomas_thwaites_how_i_built_a_toaster_from_scratch?language=en.
[2] McNicoll, Arion. "Phonebloks: The smartphone for the rest of your life." CNN. September 19, 2013. Accessed May 09, 2017. http://edition.cnn.com/2013/09/19/tech/innovation/phonebloks-the-smartphone-for-life/.
[3] Mellis, David A. "DIY Cellphone." David A. Mellis: DIY Cellphone. Accessed May 09, 2017. http://alumni.media.mit.edu/~mellis/cellphone/.

knowledge of the technicalities of mobile phone network design. These proficiencies will be reinforced through teaching them to others in workshops, hopefully spurring others to become interested in the topic. Ultimately the project aims to make both computing and mobile phones more accessible and approachable while promoting critical thinking about the design of quotidian technology.

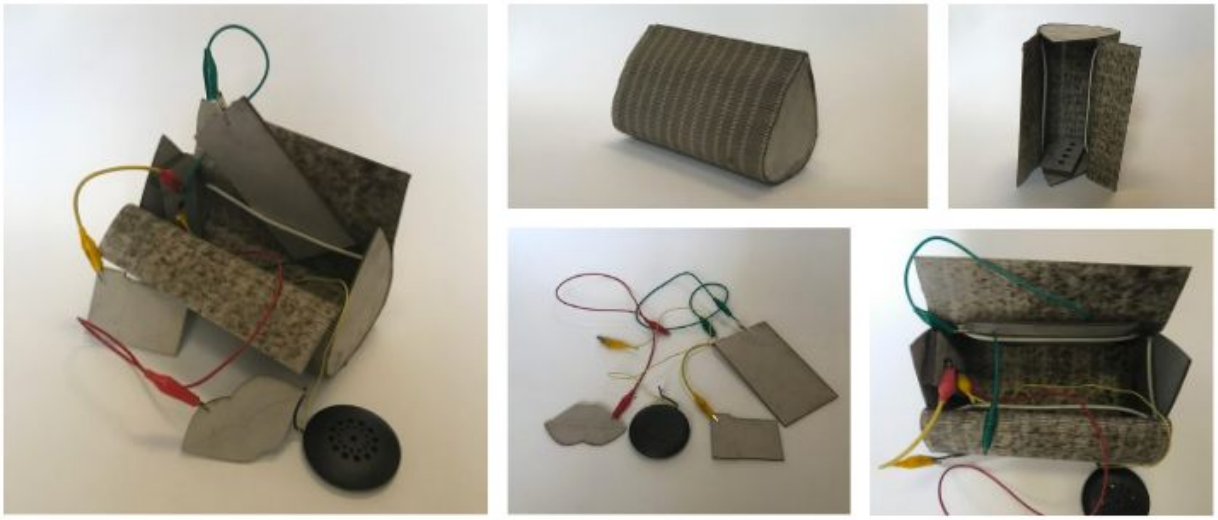
Audience

While this project can be adapted for many different audiences, there is one initial target audience. This preliminary audience consists of designers, makers, and tinkerers who have limited experience with microcomputing and an interest in learning more. This community can be reached through existing infrastructure such as universities, new media museums, art and technology organizations, and conferences. Additionally, online material will draw others to the project. This online material consists of a trailer, website, online tutorial, and social media. The audience experience the project by attending a workshop, following the online tutorial, and/or submitting images of their own creations to be featured on the website.

Methodology

Initial Idea

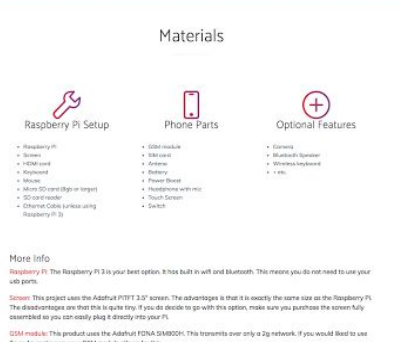
The project began as a design to explore the presence of the mobile phone in our everyday life by increasing its physical footprint. Phonebags is a conceptual design for large bag-sized mobile phones. They are not cases for existing phone but complete phones. Though stylishly designed, these phones bags are intentionally cumbersome, forcing the user to be actively aware of the presence of technology in their life.



First Iteration

The first prototype under the myPhone project followed closely the hardware and software design in David Hunt's online tutorial. This iteration expanded on Phonebag's concept, inspiring self reflection in others by providing them with the opportunity to learn more about mobile technology and take control of their mobile phone's form. The phone had a 3.5 inch touch screen, headphone jack, battery, and power switch. The software provided by Hunt only allowed for outgoing calls.

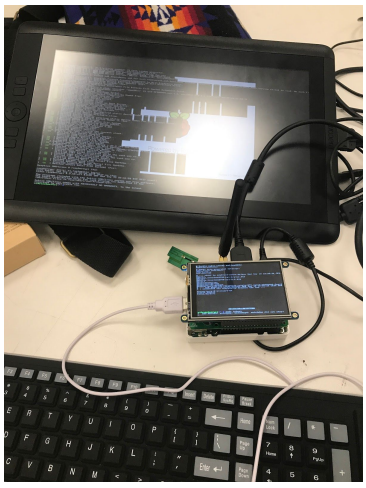
In addition to the physical phone, a website tutorial was also prototyped. The tutorial aimed to provide more resources for those who experience issues when following the tutorial. This tutorial was a direct response to a personal struggle with troubleshooting problems when following Hunt's tutorial.

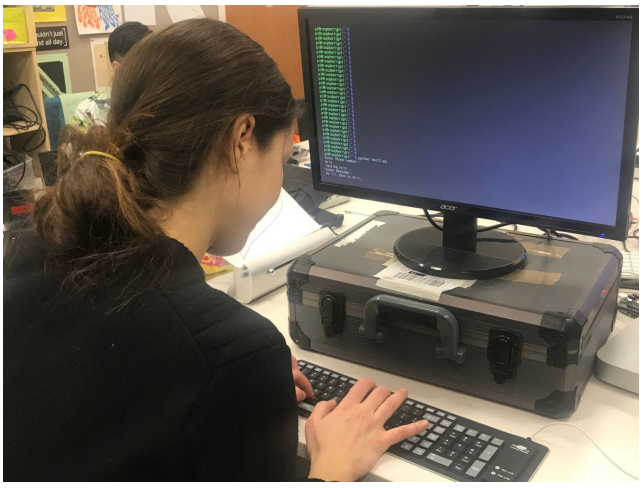


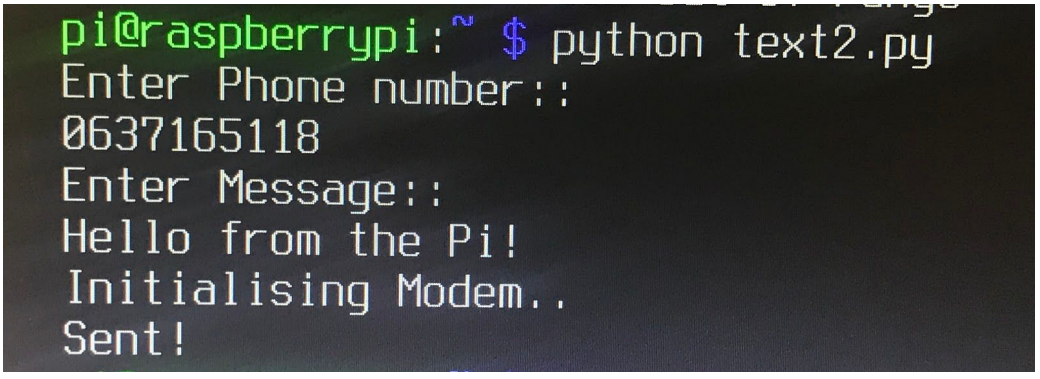
Second Iteration

The second myPhone prototype focused more on software than the physical design. This version used a custom Python script allowing users to send texts with the Command Line

Interface. Additionally, it offered a simple address book allowing for a preprogrammed number to be texted by entering “Kris” when prompted for a number. This interaction used a different GSM module that required no soldering. While this required the Raspberry Pi to be plugged in, it did not require frequent maintenance of loose wires. Problems and solutions encountered during this process were documented on the project’s blog. These entries will be revisited when assembling the troubleshooting section for the online tutorial.

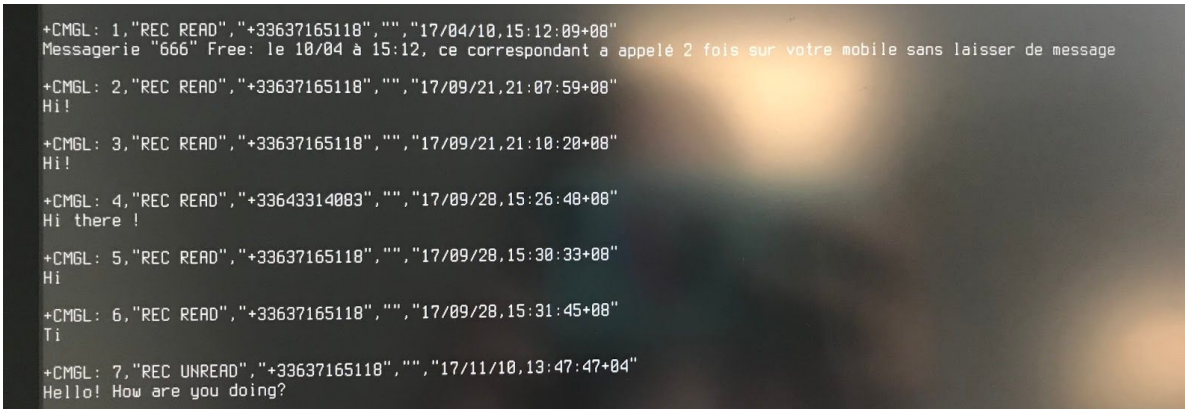


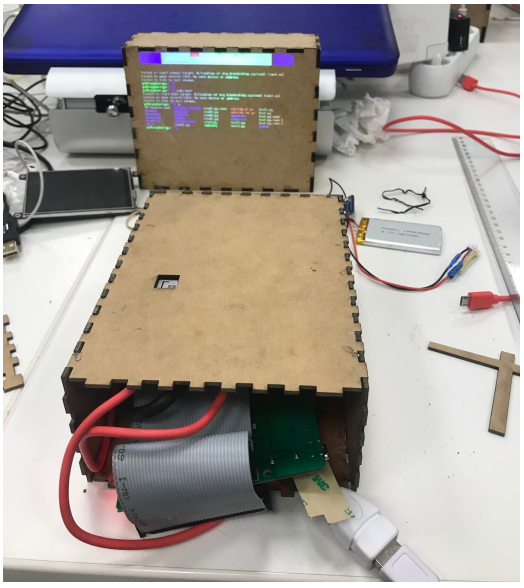




Third Iteration

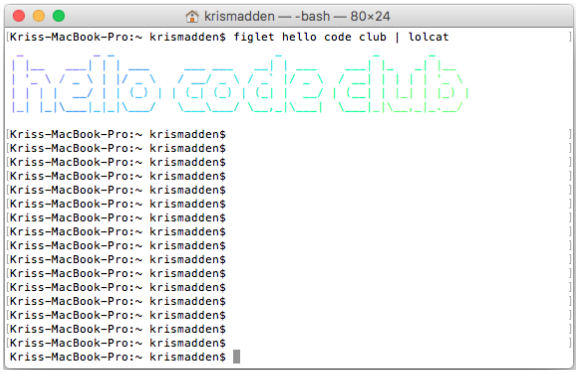
The third iteration expanded the Python program to include reading received text messages through the Command Line. In addition to added texting functionality, the prototype does not require a constant power supply; the screen, a Pico Projector, powers the Raspberry Pi. All of the components are contained snuggly in a laser cut, rectangular box. The cumbersome design brings back elements of Phonebags.

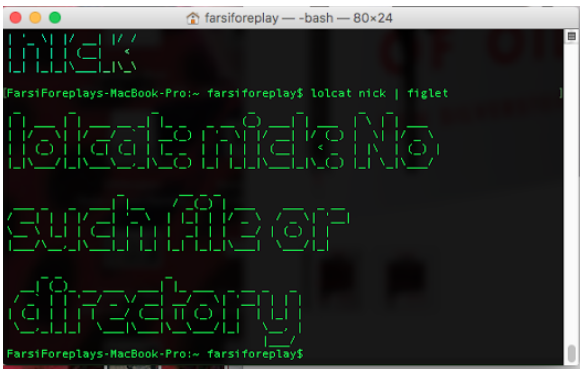




Workshop

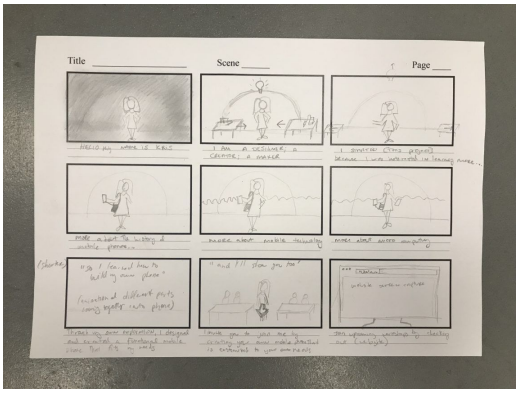
To prepare for the final myPhone workshop, I held a session during the Parsons Code Club. The session lasted roughly three hours and was an introduction to different types of interfaces, basic Bash commands, Bash concepts like piping through fun Command Line programs, and Minimodem.





Video

The video acts as promotional material for the workshop to gain traction prior to announcing the workshop. The original storyboard focused on an imaginary character named Jane. The second storyboard focused instead on me and my journey with the project. A crudely filmed video provided a rough idea of the flow before creating an 2D animatic.



Production Plan

Further production of the project can be divided into four categories: phone prototype, web presence, workshop, branding. During the first two weeks I intend to refine the past prototypes, create wireframes and mockups for the website, promote and prepare materials for a Raspberry Pi workshop, and redo the promotional trailer based on user feedback. During the next two weeks I will create a fourth prototype and document it, launch the website, run the Raspberry Pi workshop and reflect on it, and finish the trailer. In the next two week block, I will wireframe and mockup the phones GUI, refine the website and add the tutorial from the Raspberry Pi workshop, prepare and run the first DIY mobile phone workshop, and post the animatic on various social media. The next two weeks I will code the GUI, post the phone tutorial online, reflect on the previous workshop and organize the next workshop, and create a video for the DIY phone workshop. I will use Spring Break to catch up on anything I have fallen behind on. After Spring Break I will upload the GUI to Github, update the website, and prepare and run the second DIY phone workshop with a GUI. During the next two week block, I will refine the GUI and begin work on a phone bag prototype, user test the tutorials, research and apply to host the workshop outside of Parsons, and create a video for the second workshop. The final two week block will be used to finish the phone bag and document all the prototypes, refine the website, run a third DIY

phone workshop, and create a video for the third workshop. The time between this last block and the exhibition will be used to catch up on any tasks that have fallen behind and refine the documentation of the project.

	A	B	C	D	E	F
1	Week	Date (Monday)	Phone Prototype	Web Presence	Workshop	Branding
2	Week 1	January 22	Create New Case for 3rd Iteration Prototype	Create Website Wireframes	Create Promotional Material for Pi Workshop & Write list of requirements for Pi Workshop	User Test Animatic
3	Week 2	January 29	Combine Python Recieving and Sending scripts	Create Mockup for Website	Create Slides for Raspberry Pi Workshop and Gather Materials	Redo basic changes to animatic
4	Week 3	February 5	Create a new design with new features	Code Website & Create Instagram & post 3 photos	Run Raspberry Pi Workshop & Order Parts for Phone Workshop	Retest Animatic
5	Week 4	February 12	Document prototype with a video and photos	Launch Website & Post to Instagram 3 photos	Reflect on Workshop and Review workshop feedback & create graphics for Phone workshop	Redo Animatic & Decide on Name
6	Week 5	February 19	Wireframe GUI	Fix Website Bugs & Post to Instagram & Update website with Workshop photos & Draft Raspberry Pi workshop documentation	Prepare Slides	Post Animation On Youtube & Vimeo. Share on other Social Media
7	Week 6	February 26	Mockup GUI	Post Raspberry Pi Tutorial & Post to Instagram	Run First Phone Workshop (CLI)	
8	Week 7	March 5	Code GUI	Post Instagram	Organize Documentation of Workshop & Reflect on workshop feedback	Create Video for Workshop & Post it
9	Week 8	March 12	Code GUI	Post Instagram. Post tutorial for phone.	Promote Second Workshop & Refine Graphics & Refine Slides	
10	Spring Break	March 19	catch up on anything that has fallen behind	Post Instagram & catch up	Catch Up	Catch Up
11	Week 9	March 26	Upload GUI on Github. Create new prototype for phone.	Update Website & Post to Instagram	Prepare for Second Workshop (GUI) making sure all materials are ready	
12	Week 10	April 2	Document prototype and GUI	Post Instagram	Run Second Workshop	
13	Week 11	April 9	Edit GUI and code from Feedback from phone workshop	Post Instagram & Update Phone tutorial	Research Where Workshop can be done & Prepare application material	Create Video for Second Workshop
14	Week 12	April 16	Create A Phone Bag	Post Instagram & User Test Website & Tutorial	Apply / Email People & Adjust slides for 3rd Workshop	
15	Week 13	April 23	Finish Phone Bag	Post Instagram & Refine Website Base on User Results	Run 3rd Workshop	
16	Week 14	April 30	Document all Prototypes	Post Instagram	Reflect on Workshop	Create & Post Video documentation of 3rd Workshop
17	Week 15	May 7	Catchup	Post Instagram & Catchup	Catchup	Catchup
18	Week 16	May 14	Catchup	Post Instagram about upcoming exhibtion & Catchup	Catchup	Catchup
19	Commencement	May 18	Exhibtion	Post Instagram about Exhibtion	Exhibtion	Exhibtion

Reflection

Through preparing this document and the final presentation, I have come to the realization that I am not happy with the direction of the project and the work produced in the second half of the semester. I plan to revisit the thesis concept and removing the workshop aspect from it. While I am still interested in running workshops, I do not wish for them to be a focus of the project. The first step will be reevaluating the goals of the project and what I envision as the end product. I will then create a new timeline for the new goal.