Provocation

Dérivé | Shoes Your Own Adventure

Nick Doerschlag, Annalise Kamegawa, Meena Kaushik, Tonya Nguyen, Janaki Vivrekar

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I. Introduction

Dérivé is a dynamic mode of discovery that lights the path to an adventure. By simply connecting users' shoes to their Dérivé mobile app, Dérivé helps them engage in spontaneous journeys full of discovery, out of step from the typical mundanity of our daily lives. Dérivé suggests flexible paths that fit a user's spatial, temporal, and preferential constraints while balancing their journey with a sense of delightful adventure.

In our day-to-day lives, we're so focused on transporting ourselves from Point A to Point B that we forget to appreciate the journey. With a pair of Dérivés, users can distance themselves from this typical narrative around transportation and engage in a spontaneous journey full of discovery and detours as they please – all without having to constantly check a map on their phone.

The Dérivé shoe and mobile app move in tandem with the user. After the user shares the details of their preferred experience with the app, Dérivé generates a customized experience for its user. Whether the user is a long-time local looking to see their city in a new light or a newcomer to an unfamiliar town, Dérivé has the ability to change their perspective.

The name "Dérivé" is a nod to Guy Debord's Dérivé: the idea of discovering a city by getting lost in it. Given our constant access to information, especially through our smartphones, achieving this isn't really possible in the modern day. This isn't to say that our product is supposed to create a Dérivé exactly like the one Dubord conceived of in the mid-20th century. Instead, our shoe, combined with the app, acts as a creative interpretation of Dubord's philosophy – one that hopes to facilitate adventure and discovery.

Ultimately, we designed this experience to bridge the gap between Debord's era and now. As the creators, we hope to manifest an experience for our users that encourage excitement and unplanned exploration. It's an experience that moves digital technology into the background and leverages its ability to reshape our conception of the world.

Video [link]
Visual Presentation [link]

II. Motivation and Observations

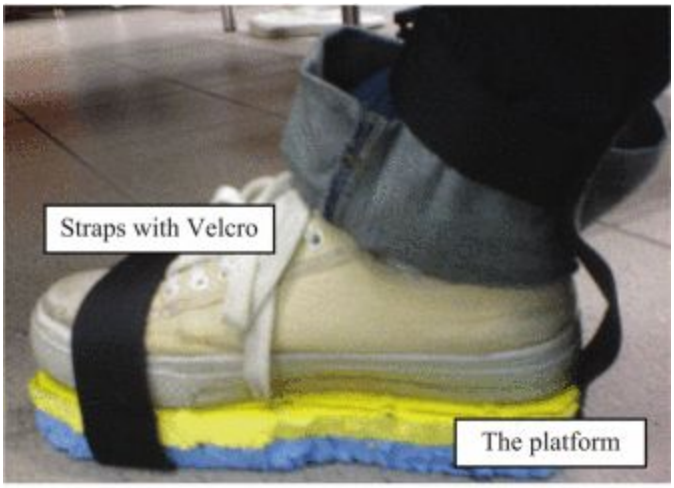
Our core motivation came from an observation we've made while walking around Berkeley: most people are focused on their phones rather than the environment. While some people are on their phones for social activities such as texting or scrolling through Instagram, we wanted to address the manner in which people use apps to navigate through the city. Current navigation apps require attention to the screen to ensure you are on the right path. As a result, people fail to appreciate their surroundings and make more spontaneous discoveries.

We were motivated to create Dérivé to encourage people to focus less on getting from point A to point B, and more on appreciating the journey between the two. We also were interested in addressing the decision paralysis that many people experience in choosing destinations, such as where to eat or what museum to visit. We wanted to reintroduce a sense of curiosity and spontaneous discovery for people new to a city as well as people who take the same path every day.

Instead of navigating the user to specific locations or paths, Dérivé encourages users to explore their surroundings by subtly suggesting users in certain directions that align with their personal preferences (e.g., music, nature, food, etc.). If the user decides to take a turn that Dérivé does not suggest, Dérivé dynamically updates its suggestions rather than forcing users on a specific course.

III. Research and Inspiration

1. J. Zhang, C. W. Lip, S. K. Ong and A. Y. C. Nee, "A multiple sensor-based shoe-mounted user interface designed for navigation systems for the visually impaired," *2010 The 5th Annual ICST Wireless Internet Conference (WICON)*, Singapore, 2010, pp. 1-8. doi: 10.4108/ICST.WICON2010.8516



(b) Illustration of the step-on-and-fasten mechanism

This paper used a modular and removable sole as their sensor prototypes. Initially, we were inspired by this paper's prototyping methods and decided 3D our soles as prototypes. They used haptic feedback on a cane, connected to the shoes, to indicate directionality. We found this design to be intuitive and straightforward and decided to also incorporate directionality into our shoe design.

2. Libero Andreotti and Xavier Costa, eds. Theory of the Dérivé and Other Situationist Writings on the City. Barcelona: Museu d'Art Contemporani de Barcelona & ACTAR, 1996.

During our brainstorm, we created multiple product names and thought that the concept of the “dérive” aligned with our design’s motivations.

3. Smart shoes: Innovations revolutionizing the future the future of footwear.
https://www.prescouter.com/2018/10/smart-shoes-innovations-footwear/

We used this article to inform ourselves about what kinds of technologies can be incorporated in shoes and learn about what kind of needs consumers want fulfilled when they buy bluetooth-embedded shoes or shoes that have sensors. We found that there was a large range, such as using sensors within shoes to gather biometric data or using paired haptic feedback. For example, we were inspired by Xiaomi, which synchronized bluetooth-enabled shoes with a cellphone app.

Most significantly, we were influenced by Lechal, a footwear designed by Ducere Technologies is for visually impaired people. The interactive haptic-based navigation system in the shoes detects the vibration in the feet and guides them to their destination. In the same fashion, we decided to use an LED strip which mapped lights to the proposed direction.

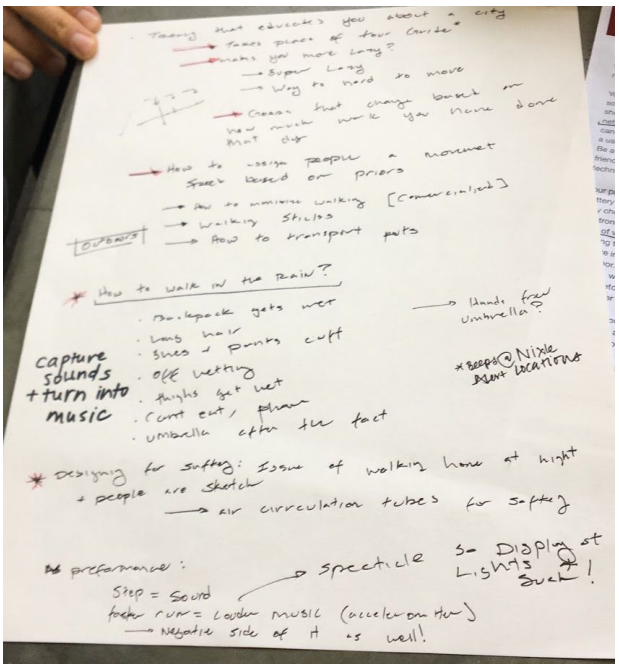
A big takeaway from the prescouter article was that smart shoes are very expensive, ranging from $170-$300. However, given that we, a bunch of college students, could prototype our own shoe with the same functionality, we agreed to the idea that we would make our project open-source that others would create their own shoe and change our source code as they wished.

4. Designing a shoe: 2001
https://www.discovere.org/sites/default/files/Design%20a%20Shoe_090716.pdf

We were inspired by shoes commonly seen at raves. Their bright lights were lent nicely to giving the user visual clues. Additionally, their bright and cheery aesthetic made us feel inspired and adventurous – two qualities we wanted in our application and physical product.

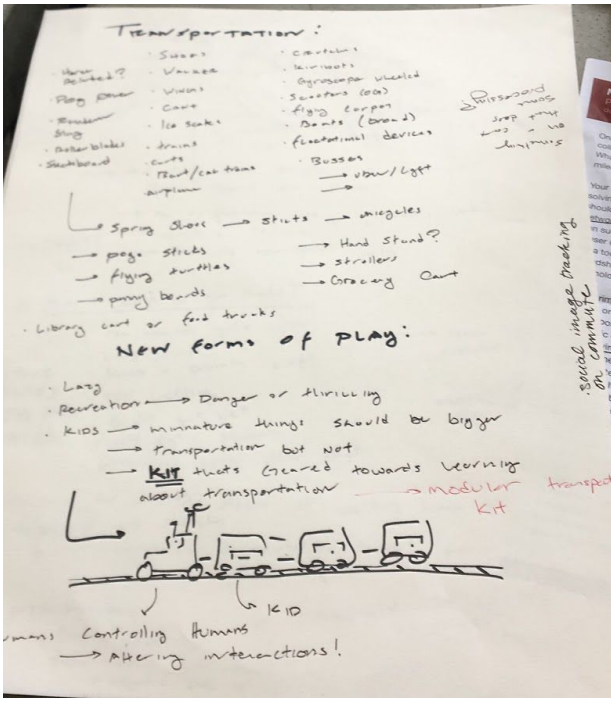
IV. Process: Brainstorm

With the goal of producing a novel interaction experience using transportation technology, our team hit the ground running with an initial brainstorm where we produced over 40 ideas. (See **Brainstorm 1** in the Appendix for a list of our ideas.) Some of our brainstorming techniques included:



- Collectively creating a near-exhaustive list of various forms of transportation, ranging from flip-flops to wings to a reindeer-powered sleigh!

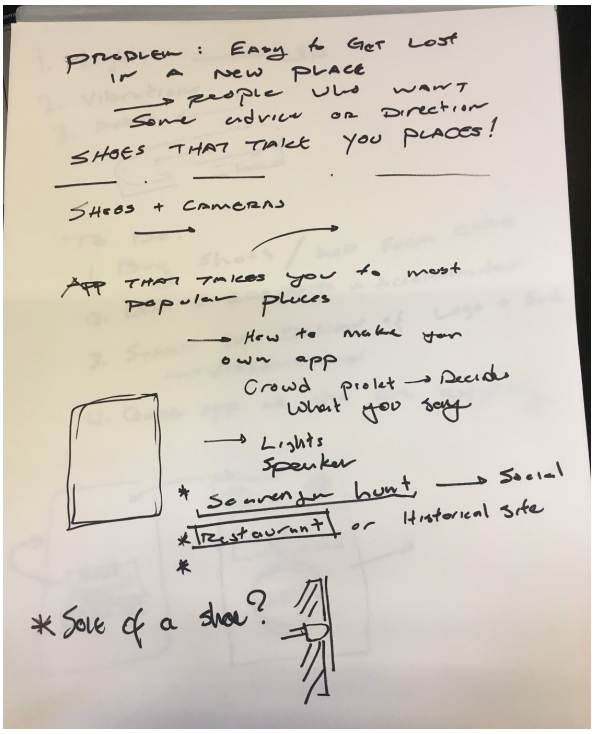
- Generating a list of social issues and topics that sparked a passion in us, specifically around the theme of physical spaces and how we choose to navigate them. For example, we were intrigued by the possibility of projecting social mobility and limitations in social mobility onto physical mobility and its limitations.



- Brainstorming around the theme of **design noir**. We based many of our ideas around dark patterns that we observed with respect to transportation. For instance, we discussed ways we could design items that made it easier for people to stay glued to their screens as they navigated the world.

- Brainstorming around the theme of **ludic design**. We imagined new forms of play and ways to have fun. We proposed ways to teach children how transportation works through miniature models of vehicles and modes for transportation.

Perhaps most notable from our first brainstorm was our team's predilection for using transportation not only as a mechanism to move from Point A to Point B, but also as a means to **explore the world around us**. Using this finding as a point of departure for our next brainstorm, we proceeded to come up with ideas that projected new meanings onto public spaces and helped people view public spaces through a new lens.

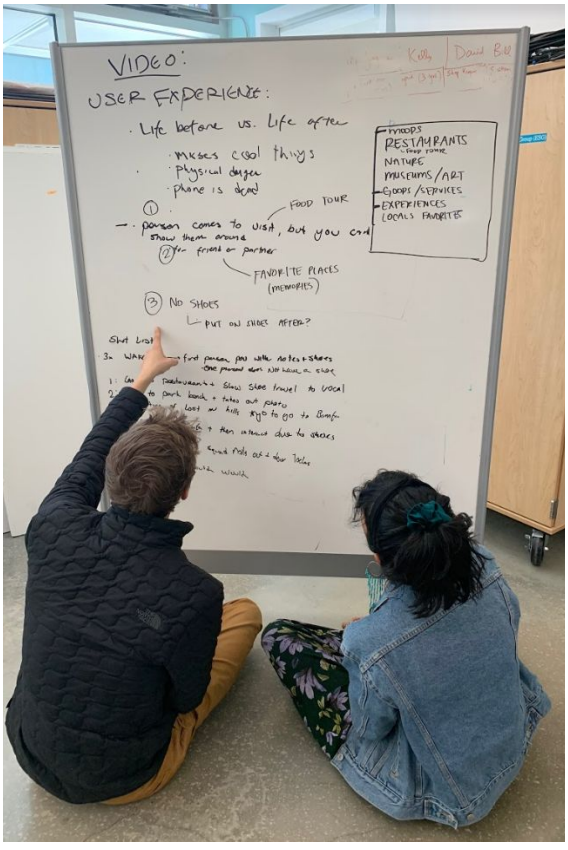


In Brainstorm 2, we decided to do some focus-brainstorming using the form of the shoe as a key inspiration. (See **Brainstorm 2** in the Appendix for an extended summary of this brainstorm.) We also became interested in brainstorming around specific target audiences, like young children, the blind, or the elderly.

Some of our notable ideas included taking the ambient audio of a public space and transforming it into a musical piece, or creating a pair of shoes that allowed young children to project games on the ground (ex: hopscotch) or transform a concrete surface into a pond full of lilypads.

The runoff of our creative brainstorming during this session led us to think more deeply about the form of shoes and reconvene with an intentional purpose around **creating a pair of shoes that can help people explore, discover, and understand the world in a playful way**.

Following the in-class critique of ideas, our team decided to pursue our goal of creating a novel shoe that can guide you to new places by suggesting paths in the spirit of discovery.



Brainstorming user experiences at FSM, BCNM, and Jacobs Hall.

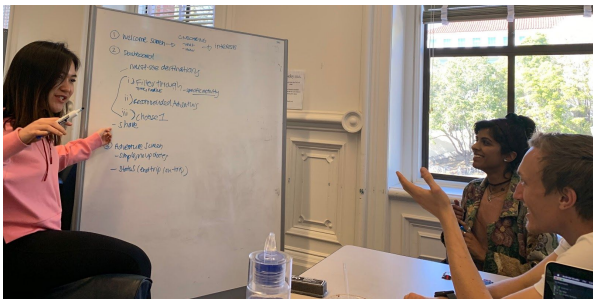
V. Process: Bodystorming and Sketching

As we transitioned from brainstorming to sketching and building, we started off by doing a quick bodystorming session for the shoe interface. Using a strip of paper to represent a strip of lights and our imagination to model the user interaction, we discovered a set of behaviors we wanted to encourage for users who embark on a journey with our shoes:

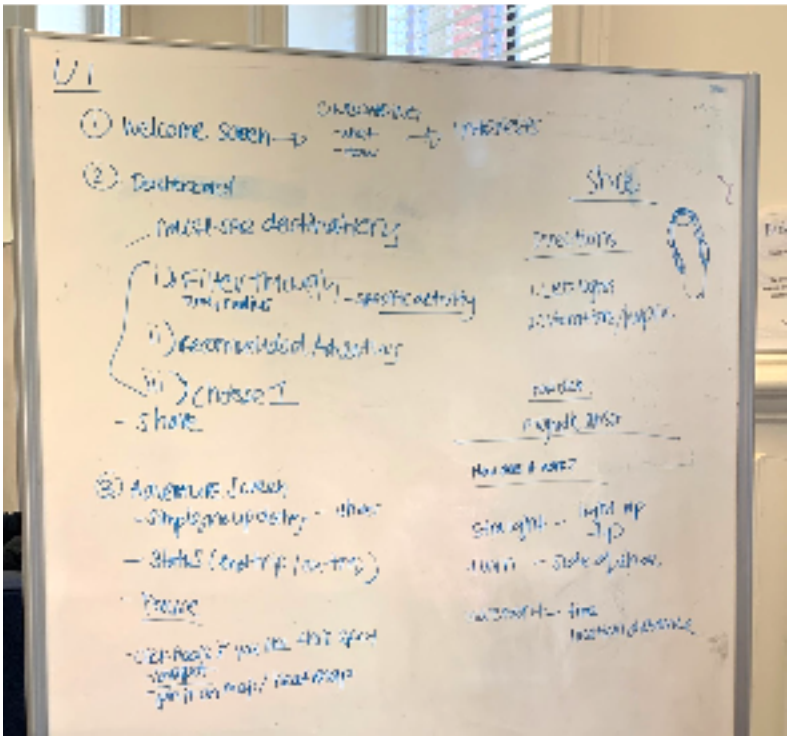
Bodystorming the shoe interface in South Hall.

1. Grow a spirit of discovery, cherish spontaneity, and enjoy exploration
2. Minimize screen-time or interaction with their mobile phone
3. Experience two to three moments throughout the journey that reliably spark excitement and provide moments of discovery
4. Use their experience with these shoes as a conversation starter or topic of discussion, to spawn and encourage social interaction

With these goals in mind, we whiteboarded a sketch of the user flow, emphasizing a minimal mobile interface that prefaced the journey.

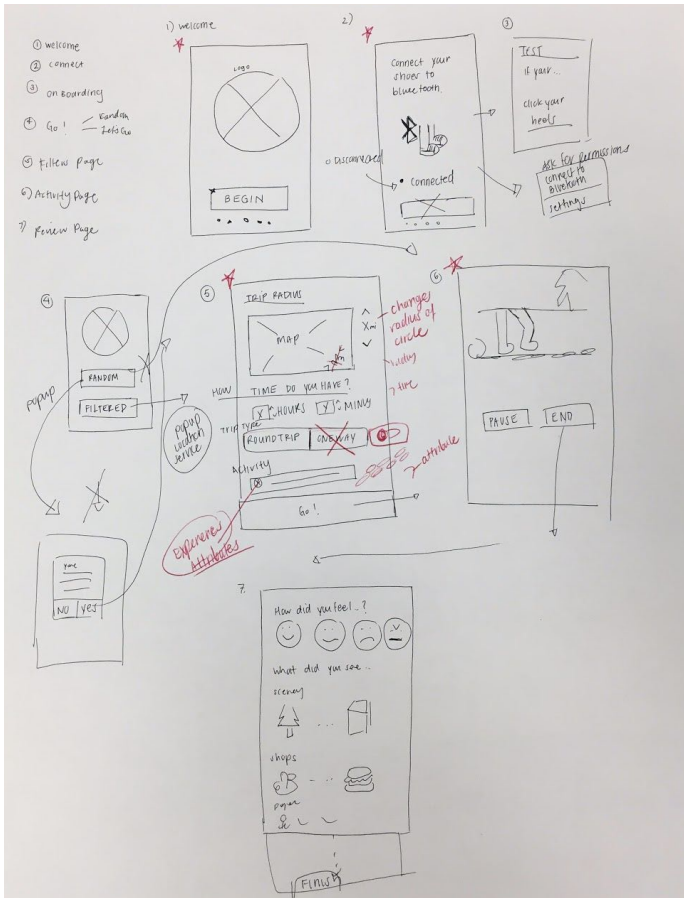


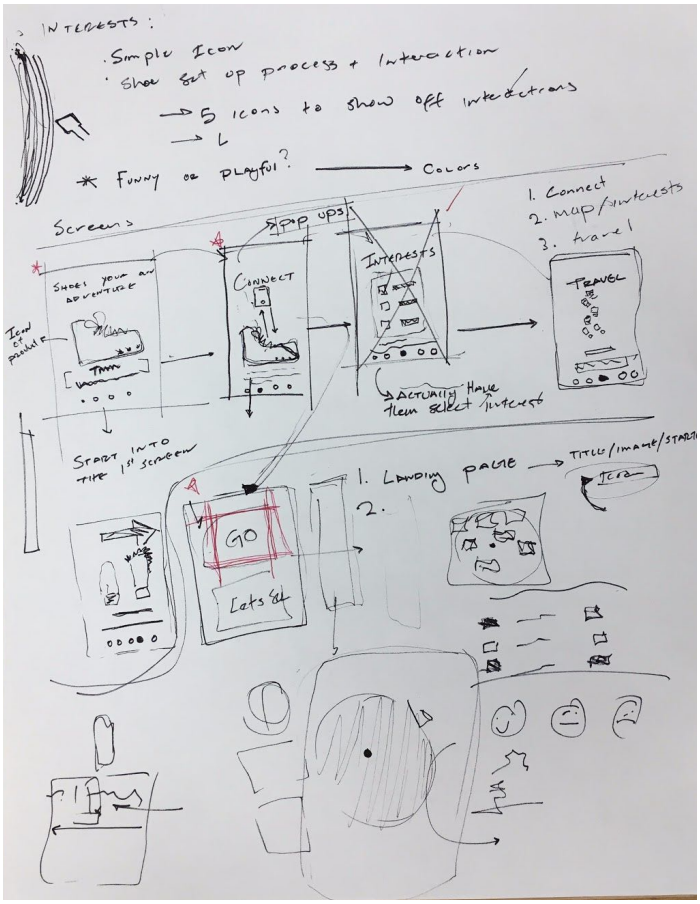
Next, we branched our efforts into creating physical prototypes for the shoe and mocks for the mobile interaction.

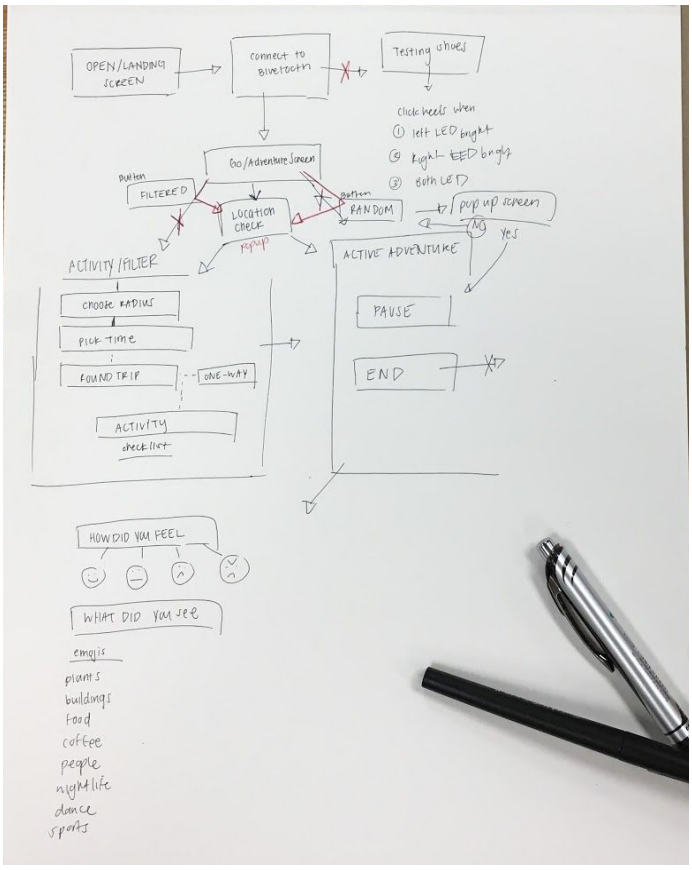


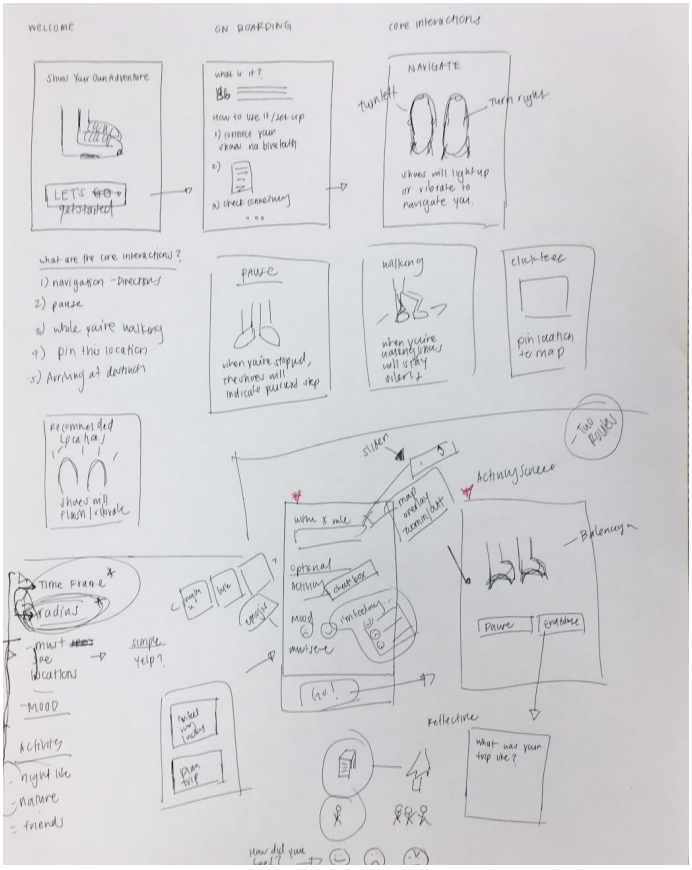
VI. Process: Prototyping the Mobile Interface

Low-fidelity Sketches and App Flow



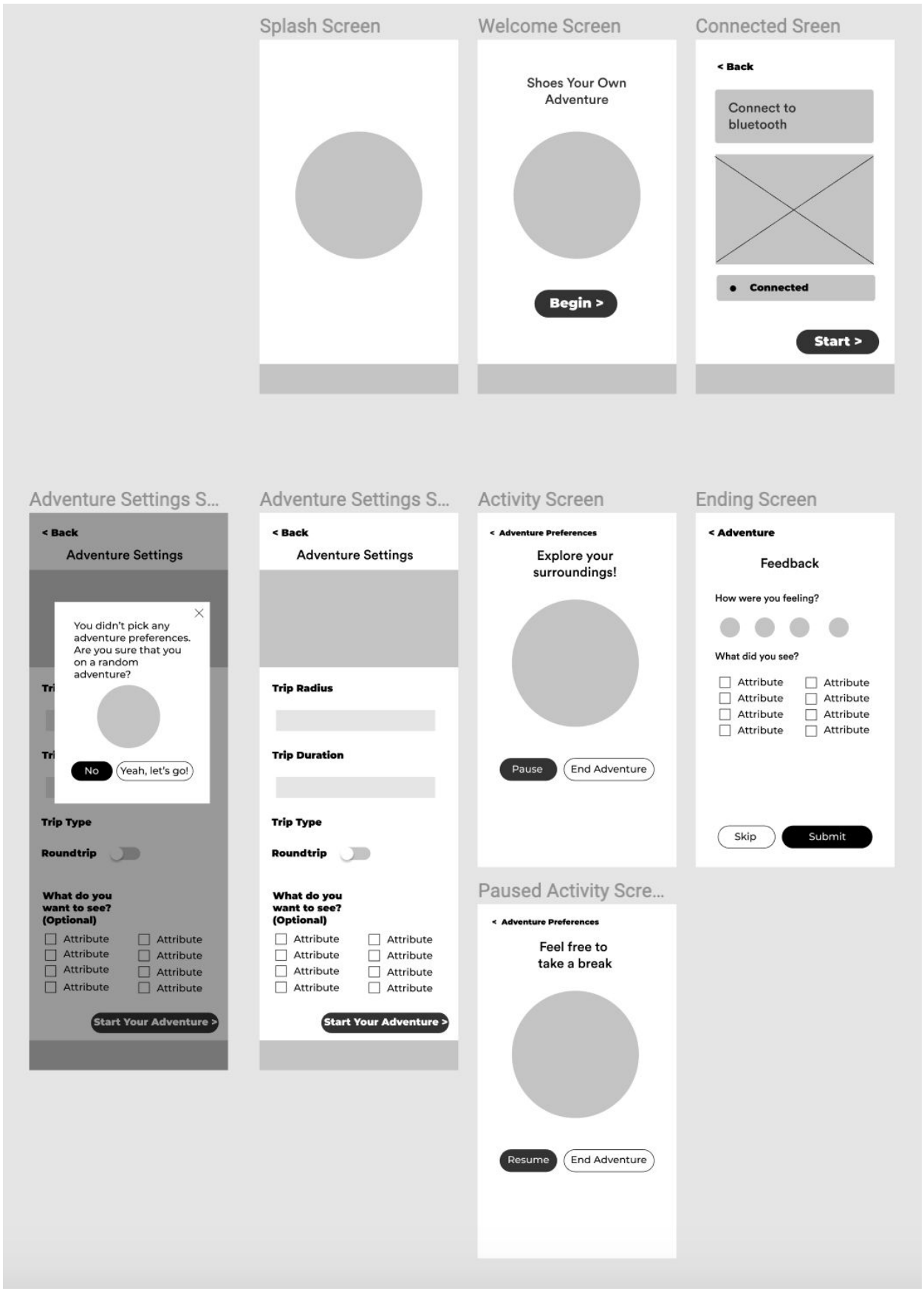






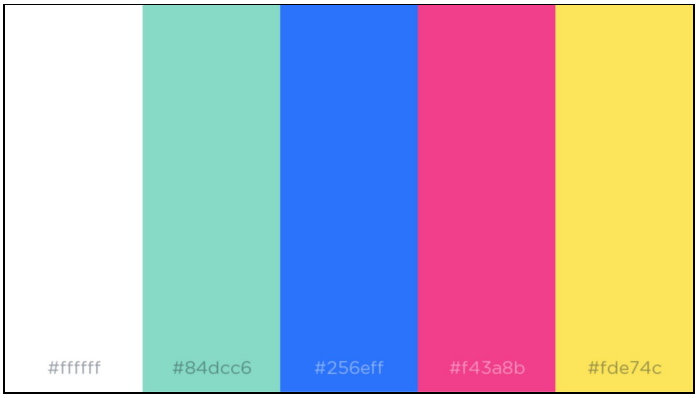
Medium-fidelity Wireframes [link]

With low-fidelity sketches and a user flow, we created medium-fidelity Figma wireframes. Access to all of the designs should be visible on the left-hand menu on the Figma.



Branding and Style Guide [link]

To add an element of branding and consistent visual design to our interface, we brainstormed words and colors tied to the brand we wanted to create. For example, some of our inspirations were words and phrases like “playful”, “bouncy”, “funky”, “spontaneous”, “explore”, “wild”, “adventure”, and “let’s go!” We also explored color palettes; our first color scheme iteration was bright and playful, as pictured below.



After some iteration, we created a coherent brand and made a style guide, pictured below, with illustrations and diagrams for the mobile interface.

Color

PRIMARY (buttons) #256eff

PRIMARY (text) #3225ff

SECONDARY #84dccb

TERTIARY #6c63ff

Type

TITLE

Montserrat Black 24pt

Header 1

Montserrat Bold 24pt

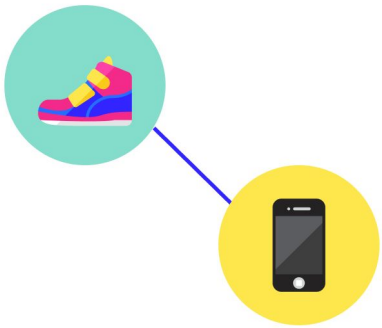
Header 2

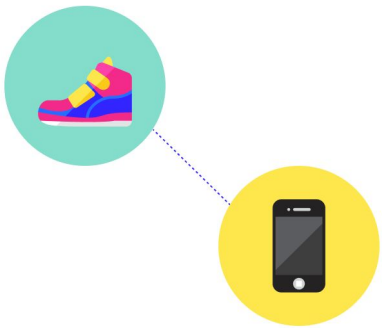
Montserrat Semibold 18pt

Paragraph

Montserrat Medium 16pt

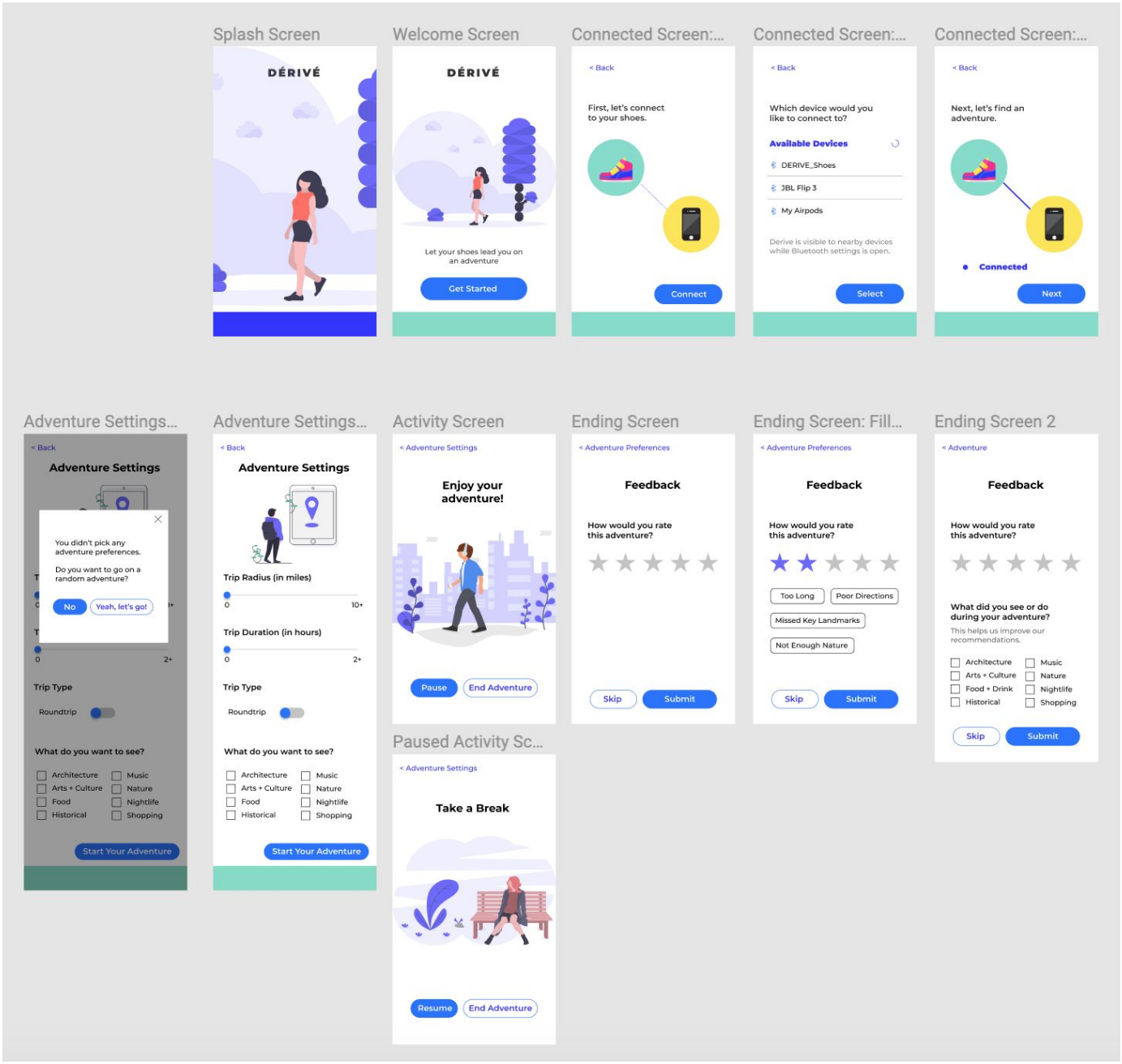
Illustrations





High-fidelity Mockup [link]

We transferred our ideas from the medium-fidelity wireframes to a detailed high-fidelity Figma mockup, bringing us a step closer to the final mobile app.



High-fidelity Mobile App

We decided to use the Android mobile platform to create our mobile app, with the goal of making our technology as accessible as possible. We also designed our system with the intention of making the application **open-source**, and built it in a way that would support the possibility of creating an accessible API for users to develop and adapt the app for their own use cases.

Use Cases and Scenarios

For example, we imagined the following scenarios:

- A group of friends holding a scavenger hunt, where a part of our technology could help guide individuals to different hidden spots
- Geocaching reimagined. A popular activity, geocaching could become something more intriguing with the element of a Dérivé guiding users with lights indicating direction, rather than users following directions out of a map on their phone.
- Partners or friends re-creating a walk which takes the individuals back to their memorable spots
- Map in closest route to public transportation. The shoes could be activated when public transportation is desired
- Hot or cold. The shoes change color and direction in order to indicate when a user is closer or farther from a desired location
- One college student could program a series of destinations and hand off the shoes to a friend who is visiting them. This would allow the student to attend class while the visiting friend gets a taste of fun things to do in the city
- Sightseeing: the shoes could be programmed and handed out to someone visiting from out of town.

Technical Design Document [link]

We approached development by first creating a technical design document, to scope out the specific screens and data structures we'd need to functionally implement the app. This allowed us to collaborate and modularize tasks as we implemented the mobile app. Refer to the **Technical Design Document** table in the Appendix for more details.

Github Repository [link]

Details and documentation of our step-by-step technical development are available at our Github repository (https://github.com/vivrekar/shoesyourownadventure).

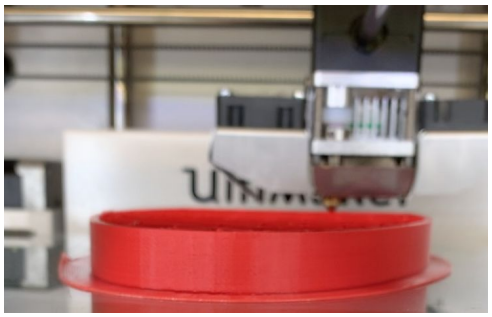
VII. Process: Physical Prototyping and Electronics

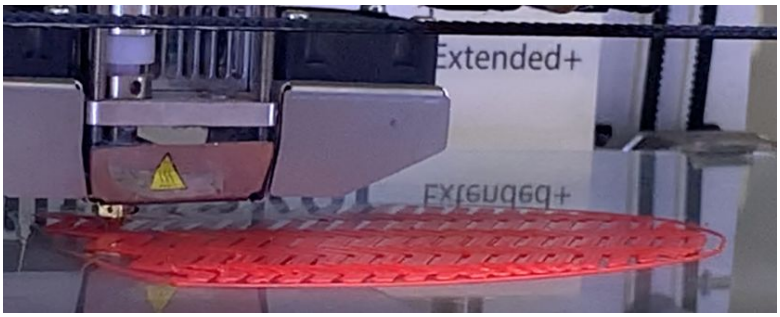
In order to create the physical model, we initially iterated in paper and cardboard. This allowed us to make quick changes and incorporate different mockup of electronic designs. We learned a large amount of information through this process such as the appropriate placement of electronics to mitigate mechanical damages to the product through everyday use.

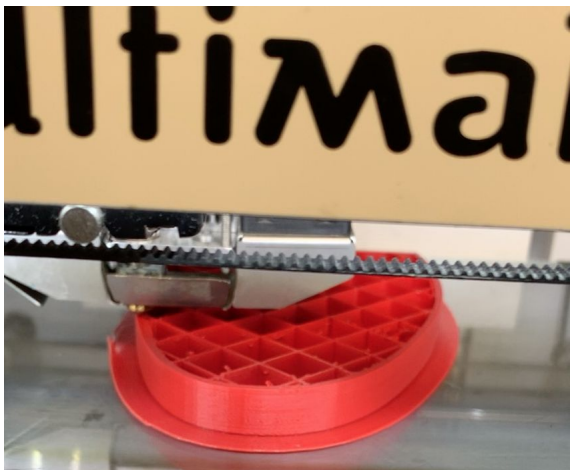
3D Files and STL [link]

With a good understanding of the necessary structure, we then translated our ideas to a 3D design software, Rhino, where we focused our efforts into creating an accessible 3D printed housing that could be recreated by others outside of our initial group. Creating this 3D file required gathering accurate measurements using the digital rulers as well as constant updates when 3D prints were not tolleranced correctly to fit parts.

The 3D printed housing was designed to be accommodatable to cheaper electronics such as a housing for double-A batteries instead of our final LiPo design. By creating these files to allow the use of cheaper electronics, we hope that more people will be able to download and re-create our product. We do understand that many people do not have access to a 3D printer, but if anything we hope that by creating an open source product we are sharing the knowledge and information gained through creating this product. If people do not have the budget or resources to create this product, maybe they can create something else that utilizes the 3d model of a shoe, or the electronics that go inside.





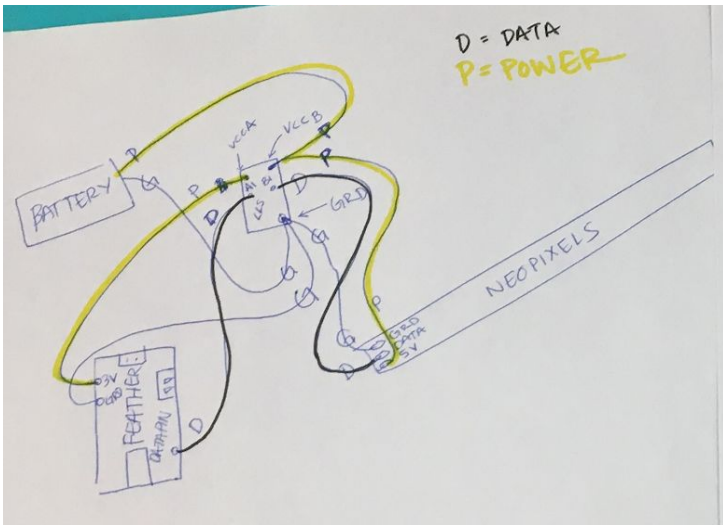


Electronics

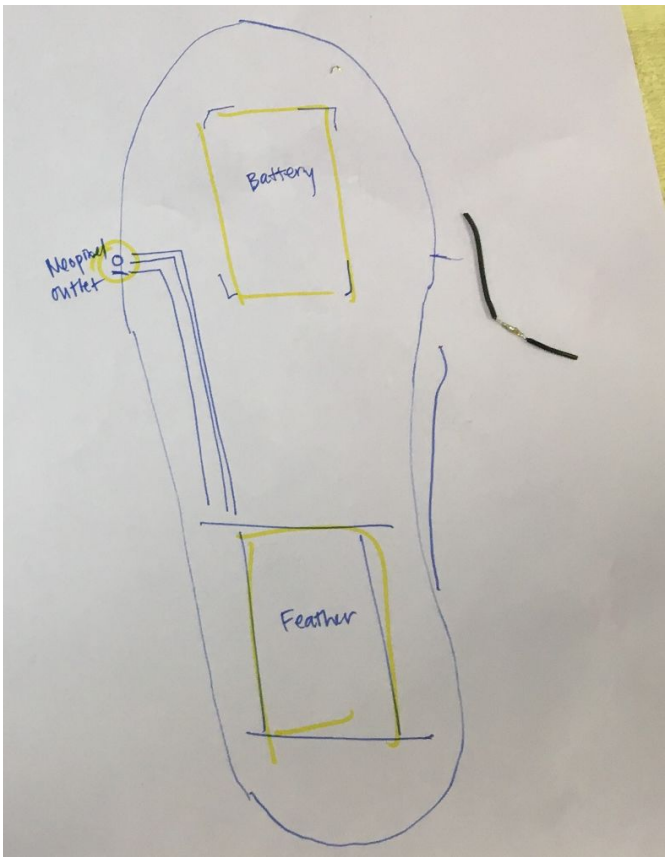
The two main electronic components for this project were an Adafruit Neopixel RGB LED Strip (60 LED) and an Adafruit Arduino Feather M0. We also used a 3s Lipo Battery, AA Battery Pack, BreadBoard, Diffuse Layer, and Wires.

Arduino IDE Code [link]

Our code to program the Adafruit Feather to control the Neopixels is a modified version of a tutorial from Adafruit (https://learn.adafruit.com/ble-feather-lamp) that allows users to use the Bluefruit app to control the color patterns of a neopixel lamp. We programmed our Feather to create four different signals, indicating the following to the user: turn left, turn right, move forward, and you have arrived. We programmed the neopixel strip to accept certain bluetooth packages that signaled for certain light patterns. Because a feather M0 takes 3.3 V and a Neopixel strip takes 5 V, we initially fitted our electronics with a logic level shifter to protect the feather while providing adequate power to the Neopixels. Refer to the fritzing diagram below.



Once we realized that a battery pack supplying 5V would be too bulky for our project, we settled on using a 3.7V lithium battery that fit more smoothly into the sole of a shoe. While this doesn't give the shoe as much battery, it supplied enough battery to make a functioning prototype.



When we tested the usability of our shoes, we found that the connections between the neopixels and the feather were especially susceptible to bending and impact. We had to go back and re-solder the wires to strengthen the connection. We then covered these connections in hot glue to avoid accidental connection and to add another layer of security to our wire placements. After this adjustment, our shoes were a much more reliable wearable.

Product

We designed our final electronic suit to fit snugly into the sole of a shoe. While the product could ultimately be fit into a fully custom designed shoe, we decided to use a logoless shoe acquired from Good-will. By using a real shoe in our final product, it gave us the rigidity and flexibility that could only be created with the materials used in shoe construction. We then applied a layer of customization to the shoe that created our final design.

The electronics and design decisions that were formulated in the rough prototypes stayed fairly similar except for the battery design. We opted to use a 3S LiPo battery that provided a slightly lower voltage than the battery pack, however, its size to voltage was exponentially better than the battery pack. This allowed us to seamlessly fit it into the pre-existing sole of the shoe. This was more expensive than the cheaper AA battery rout, but provided a rechargeable solution that could be slipped into the heel of the shoe.

The first step in the creation of our final product was to create a channel within the toe of the shoe that would house the Neopixel light strip. We used an Xacto blade and pliers to remove as much of the hard plastic as possible and create a snug fitting for 7 of the lights on the strip. We opted to use the dremel inorder to create this channel, however, the smell and fumes associated with dremeling out the plastic was deemed unsafe by our members and everyone else in the invention lab who smelled the burnt rubber. After the channel was sized and cut out, leeds were soldered onto the neopixels and ran through a hole which was cut through the rest of the material running into the shoe. Finally we heat formed a layer of plastic to go over the batteries in order to create a diffuse layer for the lights. This is both hides the cuts of the blade and creates an aesthetically pleasing finish over the electronics. The leeds were ground, voltage, and data. The group still needed to fit the 3V battery and Feather into the sole of the shoe.

The process of fitting the electronics into the sole of the shoe required a bit more patience and planning. After discussions of the best placement, the group decided to place the feather in the heel of the shoe where it could be inset deeper into the hard plastic, unlike the thinner toe which provides little to no clearance for the electronics. Like the Neopixels, these electronics were pre soldered and then placed into channels that were cut out using an exacto blade.

Finally after the bugs were worked out, the finishing touches were applied such as removing the logos on the inside of the shoe and adding on hand cut leather detail work. Some of this detail also serves to cover the charging port and on off switch from direct contact with the outside world, hopefully, increasing its lifespan.

A Guide to Reproduce Our Project

The Tools Needed:

3D Printer
Soldering tools
Hot Glue Gun

The Materials Needed:

3D printer Filament (preferably material such as soft PLA: flexible Filament):
Soldering Wire:
Bluetooth Feather: $30
LED Strip: $10-$20
Battery Enclosure: $3
AA Batteries $5

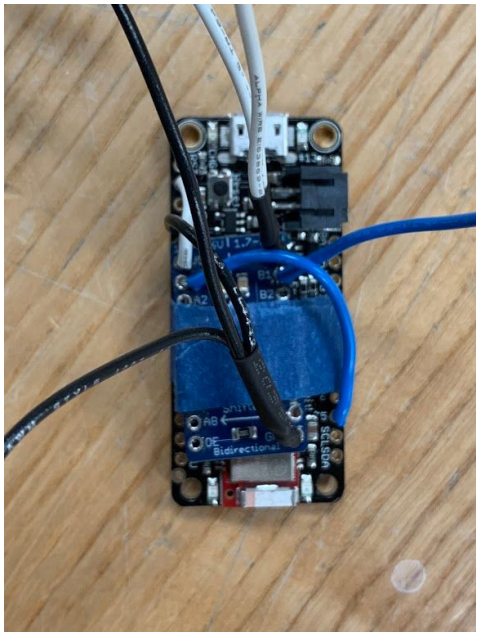
Instructions:

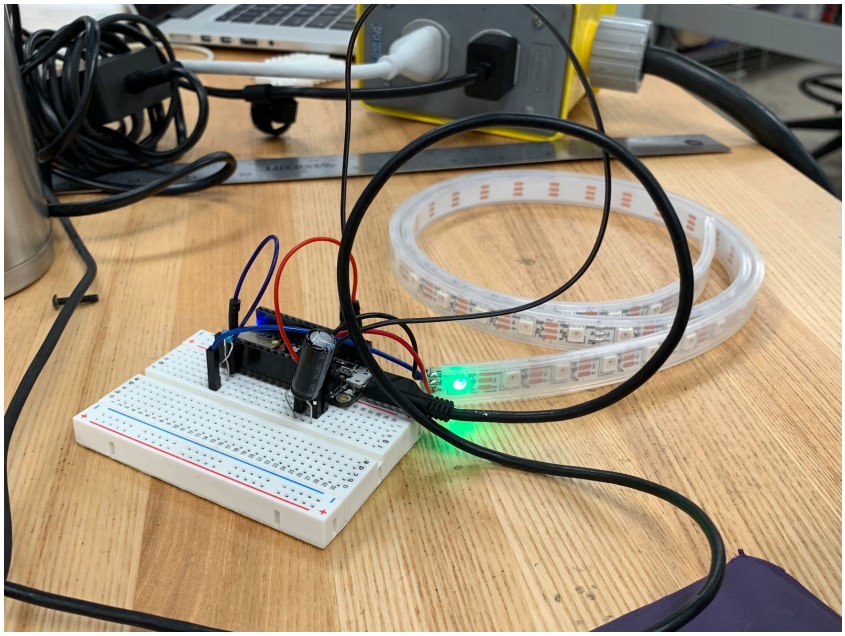
1. Download the STL files
    a. Our STL files are sized for a men's 10.5 inch foot, in the future we hope to have our original CAD files with adjustable constraints that allow users to maintain cavity sizes while also adjusting the sole to their desired shoe size
    b. When printing the sole, load the STL file into your 3D printer's specific software. Infill should be at around 20-30% to maintain structural integrity while also allowing for flexibility
    c. Make sure your printer is loaded with flexible material so your finished sole has so movement
        i. Flexible PLA is great! Just make sure to do a small test print to ensure that your finished print has enough flexibility. Sometimes flexible PLA produces pieces that are harder than the filament first appears to be.
2. Print the two halves of the shoe sole
    a. When you are done printing the shoe, make sure to use an adhesive that will adequately bond PLA to itself. Check out this post (https://hackaday.com/2018/02/07/locally-sourced-pla-adhesive/) if you have any hesitations about your adhesive methods!
    b. Use this moment to check that all your electronics fit into the cavities. If they don't, you can either adjust the file and reprint it or take a dremel to the sole to try and widen the cavity.
        i. Be careful if you use a dremel because the friction causes the material to get really hot and melted pieces may affect the integrity of your sole.
3. Download the arduino IDE sketch and attach the electronics using the circuit diagram
    a. Make sure to select the correct board and port when uploading the sketch to your feather.

    b. We used a 3.7V lithium battery to save space and make the shoe more comfortable and flexible, but it is recommended that, if you have access to a 5V mobile power source, to use that instead
        i. If you have this 5V power source, follow our circuit diagram and make sure to incorporate a logic level shifter to protect your electronics.
4. Install the electronics into the shoe
    a. If you 3D printed the sole, everything should press fit and you should be able to run your wires through the sole's channels.
        i. Wait until the end to solder the Neopixel strip into place because the Neopixels won't fit through the channel
    b. If you are modifying a preexisting shoe, dremel out a cavity in the sole for the feather and the battery. Place them in place, solder in the Neopixels and replace the topmost in-sole layer
        i. We choose to dremel out the cavity near the arch of the foot because there is less pressure at the arch. In addition, it creates a cavity for the electronics without applying too much pressure.
5. We cut out an arrow in beige leather to add some style to our shoes. We wanted to indicate that our shoes will take you places, but what your shoe means to you is all up to you!
    a. Whatever designs you add, make sure to look up what kinds of paints and adhesive will jive with your shoes material to ensure a long lasting, beautiful product.

The Process, Documented in Pictures

An early prototype to figure out placement of electronics





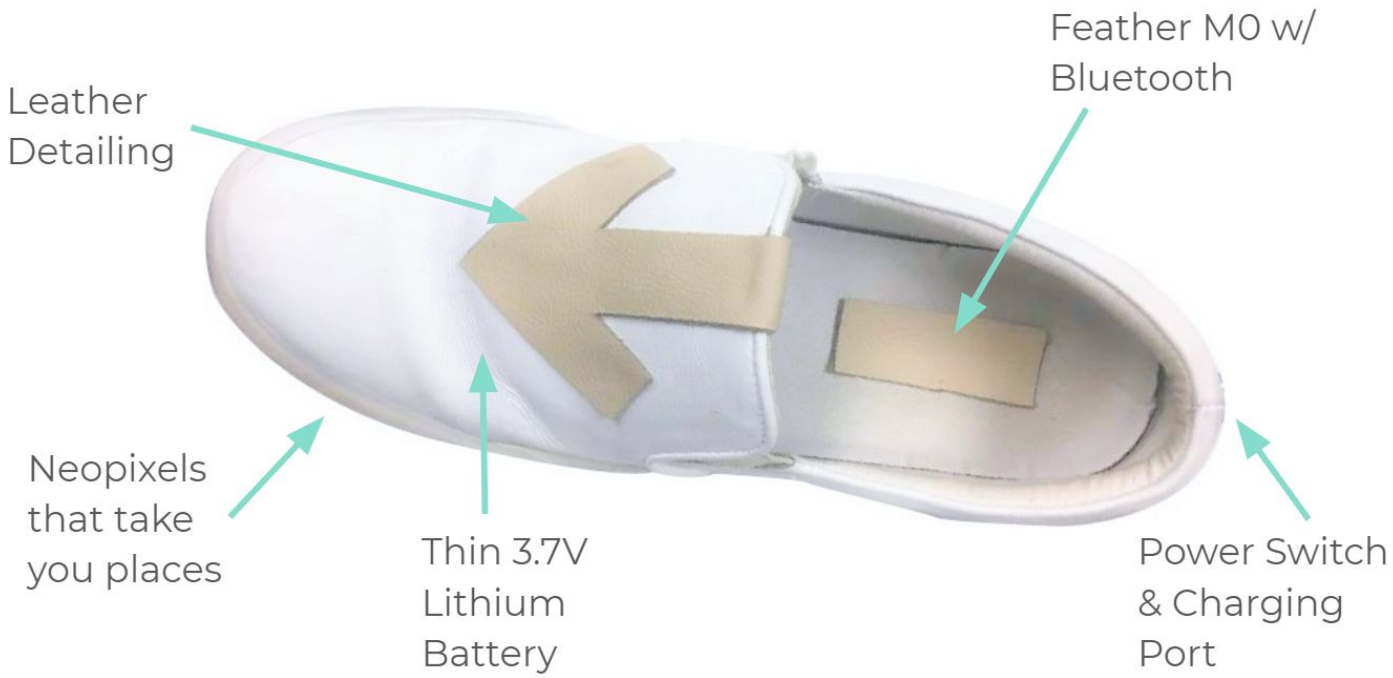
[Top Left] Our final wiring the Feather M0

[Top Right] Prototyping the Bluetooth to neopixel connection on a breadboard.

[Left] Cutting the recess in the toe of the shoe to place the neopixels flush with the sole.

Dremeling out a recess in the inner sole of the shoe to place the feather M0, a lithium battery and some wires

Our near-final product with a diffused display and leather detailing



Final product with details

Appendix

Brainstorm 1

1. Transportation as a Tour Guide
    - Skateboard that tells you about your city
    - Skateboard that tells you VERY negative things about your city (Linked directly to Nixle to give you location)
2. Transportation made harder
    - Gear ratio that relate based on your social class
    - Assign movement speed to aspects of your life
3. Transportation through the outdoors
    - Walking sticks that give you information
4. How to walk in the rain
    - Hands-free umbrella attached to yourself
    - Umbrella with embedded LEDs connected to weather report (light up)
5. Design for safety
    - A wall border
6. As a Performance
    - Walking speed translates to sound
    - Somehow it becomes a spectacle
7. Ambient audio
    - Have the sounds of a city be translated into a musical piece
    - A way to bring people together ??
8. Transporting pets or animals
9. Transportation that makes us **lazier** (makes it really hard to move at all by turning gears)
10. Transportation that is recreational or thrilling
11. Transportation for kids
    - Miniature cars that are controlled by kids
    - Tie kids together corral-type modeled like a train /  more playful
    - Educational transportation construction kit for kids to create their own mini transportation devices + learn how transportation works
12. Humans controlling humans
    - Digital interface that allows me to control where you're moving
13. Transportation for homeless people
14. Silent Transportation
15. GPS tracker / location safety
16. Tech bro transportation with portable desk
17. Map a musical / audio map onto a physical space (choose your own adventure with your shoes)
18. Rube goldberg machines
19. Photos you could have taken (proxemic context-aware) where your shoes take you, where you're going + give you a photobook of your journey

20. A shoe that navigates for you
    - Lights up when you get closer to the place you need to be
21. A squirrel-feeding shoe so it leaves a trail of breadcrumbs like hansel and gretel + you get a following of squirrels
22. Your child's first shoe (as child is transitioning from crawling to walking)
    - Helps them not fall
    - Or cheers every time they successfully take a step
23. A shoe for blind commuters that gives them a sensor/feedback
    - Jennifer Peltier (Ed Roberts Campus)
24. Musicians to transport their instruments
25. Shoes with a projector: create games with your shoes!
    - Project a hopscotch grid + play games
    - Project a pool of lilypads
26. Shoes that could generate power with kinetic energy
    - Hand-crank generator (incorporate into any transportation device)
27. Stroller for Artwork/Instruments/Work Gear
28. Work on Wheels
29. Portable self-moving art exhibits roaming around in the streets (but this idea is not human-powered as of right now)
    -
30. Creating a transportation device for people who have spatial anxiety
    - Service dog
    - Sensory perception
    - Claustrophobia
    - Controlling stimuli
31. Glasses & Hat that controls sensory input - modifying the sensory-somatic experience of moving through spaces
32. Navigation technology where you can't take out your phone
    - Haptic feedback
    - Series of LEDs of shoe - go right to left
    - Count down get closer
    - Interaction:
        - Vibrating on different parts of the shoe to direct you
        - Shoes connect to location bluetooth
        - Record where you've been all day – log different locations
        - Similar to Snapchat sharing location
33. Shoes that play music (bpm) based on your pace.
34. Shoes with variable amount of weights (make it easier / harder to walk in)

Audiences

1. Parents
2. Commuters
3. Students
4. Children

5. People with orthopedic issues
6. Blind people

Brainstorm 2

- **Meeting Ideas**
    - Create an app
    - Making a kit for people to design their own experiences
        - Spontaneous tour guide
        - Shoe will lead you to the most popular shopping area / restaurant in the area
        - More hands free, more experience
        - Culinary tour?
        - Google Maps Walking Route
        - Ninja Flex - LEDs on top left and right, beeping before it has to turn
        - Bluetooth app
        - Use data from phone -> Send it to the bluetooth sensor
- Individual
    - Human powered microwave that generates heat with a crank generator
        - People are always waiting in line during lunch time, but what if you wanted to burn calories before you heated up your food?
    - **Shoes that navigate for you / Shoe-mounted device**
        - Target user: visually impaired, walking at night (https://ieeexplore.ieee.org/document/5452688)/
        - https://www.prescouter.com/2018/10/smart-shoes-innovations-footwear/
            - Seems like vibration based navigation for the visually impaired exists, but one thing we can do is make this type of work open source so that people can have access to this technology without playing inordinate amounts of money for a product that college students can make
            - “Multiple sensory hands free device as a navigation aid to detect obstacles”
        - Shoes that would vibrate in the direction you want to go or vibrate when there is an obstacle nearby
            - IR Sensor
        - I suggest that we create something similar to this but also connect it to bluetooth to log where the user has been, what their typical pace is, where they walk slower, in what routes are they most comfortable?
        - “integrates data from all transportation services as well as from other sources of information like weather forecasts or social media”
    - Shoes that log your day as well as connect to your iPhone Messages
        - Tap your feet twice to say “on my way / I’m leaving”

        - Notifies people that you're commuting (on your phone) when you're walking actively (similar to, I'm driving right now, I can't respond)
        - Visualize your day at the end based on your speed, pace, directionality, locations/longitudinal coordinates (Processing.JS)
            - Share w/ friends, diary logging of days
        - Vibrates when you need to walk FASTER or shines red/orange
        - When you're not late to something, doesn't vibrate/shines green/blue
    - Choose your own adventure shoes
        - We can limit this to the Berkeley Campus
        - Map certain locations to a story, based on the ordering
        - Can listen to the story through bluetooth, concatenates different audio clips into a continuous story
            - Someone would have to write the story
            - Can write this by doing if-statements/tree of possibilities
    - Take your work with you anywhere
        - Human powered-work table that can go with you ANYWHERE

Brainstorm 3

Product Name Ideas

-dérivé
-The Communal Dérivé
-Walk a Mile
-No Bad Names
-From ____ With Love
-Xplore
-City Sole or Sole Scape
-Shoe me around
-Air Step
-Shoe pods
-Step Up
-Step by Step
- A walk to remember
-Bounce
-Shoes your own adventure
- What are those
-PVT
-Lets Go / Shoe Go / Shugo
-Zappatos
-Chaussure
-Aller
-Journey
-Dans (like vans but also sounds like dance; also means "inside" in french)
-Vens (short for adVENture)
-GuideMe

-Walkins
-Shuri (like the character from black panther!)
-Rees (short for Shuris)
-Shoeful

Technical Design Document

In this TDD, we describe the screen layouts, activities, and data types we'll need to implement the ShoesYourOwnAdventure app. We also finalize the contract between backend and frontend for all of the components that both will need to access (ex: the names of variables to refer to buttons, text views, and other user input controls). There are helpful resources + code snippets at the bottom of this doc. Also included is a short, brief summary of git commands that might be helpful.

Screen Layouts

Layout File Name	**Components**		
	Name	**Type**	**Role/Notes**
splash_screen.xml	logo	ImageView	
welcome_screen.xml	logo	ImageView	
	begin_button	Button	
connect_shoes_screen.xml	prompt	TextView	
	bluetooth_graphic	ImageView	
	connection_status		TBD; the little red, green, or yellow status dot
	connection_status_text	TextView	
select_attributes_screen.xml	attributes_scroll_view	ScrollView	
	adventure_radius_title	TextView	
	adventure_radius_map	MapView (Google)	
	adventure_radius_slider	TBD	We should limit this to a 10 mi radius (assumes that they're walking somewhere, not driving?)
	time_title	TextView	
	time_slider	TBD	
	adventure_type_title	Switch	Switch if it's round-trip

	attributes	TBD	Some sort of list view / linear or grid layout with buttons in it
	go_button	Button	
active_adventure_screen.xml	active_adventure_graphic	ImageView	
	pause_resume_button	Button	
	end_button		
evaluation_screen.xml	evaluation_scroll_view	ScrollView	
	feeling_prompt	TextView	
	rating	RatingBar	
	...	...	...

Activities

Activity	**Role/Task**	**References**
SplashActivity.java	• Display a splash screen with the logo for a few seconds	code example
WelcomeActivity.java	• Get the let's go button from the xml file • Add an onClickListener for it • When clicked, create an Intent for the ConnectShoesActivity and then start that activity.	
ConnectShoesActivity.java	• Check if phone's bluetooth on, if not ask user to turn on • In a loop check for shoe's feather • Connect with it by using a Gatt connection. • Update connection status for user confirmation that connected • Wait for a few seconds then switch to next screen or press button to go next?	Android Bluefruit connect tutorial Android Studio's built-in example for BluetoothLe Gatt connection
TestShoesActivity.java	• TBD / Deprioritized	
SelectAttributesActivity.java	• Collect user preferences information for particular	

	adventure ● Cross-check with a hard-coded map of preferences	
StartAdventureActivity.java		TBD; need to figure out what bluetooth things need to happen when beginning an Adventure
ActiveAdventureActivity.java	● Display the animation + buttons on screen ● Handle pause or stop adventure	
EvaluationActivity.java		TBD

Data Types

Data Type	**Fields/Attributes**	
	Name	**Type**
Adventure.java	radius	Float or int
	round_trip	boolean
	attributes	ArrayList<AdventureAttribute>
AdventureAttribute.java	name	String
	selected	boolean