

Charity Wallet

Making change count, one cent at a time



MIMS Capstone Project Report

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Table of Contents

Table of Contents	2
Acknowledgements	3
The Problem	4
The Solution	5
Our Process	6
User Research	6
Generative Research	6
Initial Survey	6
User Interviews	7
Competitive Analysis	9
Defining the Problem	11
Ideation	11
Design and Prototyping	12
Usability Testing	14
Development	16
Technical Architecture:	16
Application Flow	21
Next Steps	25

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We would also like to thank everyone who helped us during our interviews - Tia Foss, Ruben Rodrigues, Clark Kellogg, and all the charities and users who agreed to speak with us. We couldn't have done this without you all!

The Problem

In the US, charitable donations have increased tremendously over the past few years. However, the trend is not the same at all income levels. According to a study, in 2017, individuals' donations to charity reached more than \$410B in the US, which reflects a 5.2% increase from 2016. However, the number of Americans donating to charity have decreased. ¹ According to a research done by Institute of Policy Studies, from 2003 to 2013, while itemized charitable deductions from donors making \$100,000 or more increased by 40%, itemized charitable deductions from donors making less than that declined by 34%². Thus, charities are relying on larger donations from a smaller group of people.

There are a lot of reasons why people hesitate before making donations, some of them being lack of financial resources, not trusting the charities to spend the money well, preferring to donate time/goods instead of money, thinking that their money is not enough to solve a problem, etc. ³ Our user research corroborated a few of these reasons. We found that the most common reasons why people do not donate are:

1. They feel they do not have enough money
2. They are unsure of how their money will be used by charitable organizations

We also found that people are more comfortable donating when they know exactly what their money would be used for. If they could see the results of what their donations helped achieve in some form makes a huge difference in how they feel after the donation and how likely they are to donate again.

¹ <https://www.theatlantic.com/business/archive/2016/12/americans-donate-less-to-charity/511397/>

² <https://ips-dc.org/wp-content/uploads/2016/11/Gilded-Giving-Final-pdf.pdf>

³ <https://www.nptechforgood.com/2018/10/10/6-reasons-why-people-do-not-give-to-charity/>

The Solution

Focusing on the main findings we got from our user research, we decided to build Charity Wallet. It is a mobile application that lets users collect change from their everyday transactions, accumulate it, select drives hosted by charities for supporting a very particular cause (E.g. Help build a shelter for the homeless on Telegraph Ave), and donate to the drives. The application also gives updates to the users about the drives they donated to, showing exactly how and where their money was used. A key feature of the app is that the users get to decide how and when they would like to make their donations.

We see our target segment as young adults who feel that they do not have enough money to make a difference to a cause or those who feel that they do not trust the current donation processes. By providing the features listed above, we wish to bridge the gaps for our target segment and usher in a new generation of donors.

Our Process

We decided to follow an iterative approach of research, design, prototype, test and build for our project.

User Research

Generative Research

While starting this research phase, we had a rough idea of what our problem is but needed more understanding and validation from users. Our users consisted of potential donors and charitable organizations. However, in the initial phase we decided to focus on potential donors to understand the problems they face. For a better understanding, we decided to start with a survey, do competitive analysis and conduct interviews.

Initial Survey

Our initial survey was aimed to validate the problem. We had over 60 respondents for the survey, with their age groups varying from 16 to 40 and over.

Hypothesis: People feel they do not donate as much as they would like to.

Our survey results indicated that 66.7% people feel they do not donate enough. 64.5% people prefer donating money over other things like time, goods, etc. While responding to challenges, if any, faced by them during the donation process, 61.3% people said they do not have enough money, 41.9% people say there is a lack of transparency, around 33% people say they tend to procrastinate, and 33% people say there's not enough time. We also asked them to give us some ideas on what would make them donate more. A lot of responses talked about transparency on how the money is being

used and seeing the impact of their donation, having better budgeting, and having concrete goals.

Key Takeaways:

1. The results gave us more confidence in our hypothesis that people feel they do not donate as much as they would like to.
2. The topmost causes for not donating enough is not having enough money, and lack of transparency in the process.
3. Having more money, seeing the impact of their donations and having a concrete goal would enable users to donate more.

User Interviews

We conducted semi-structured interviews to gain deeper insights. We conducted user and charity interviews for this. We also talked to other stakeholders who are in the philanthropy department of institutions.

Donor Interviews

We conducted interviews with a randomized sample of users to get a deeper understanding of their pain points. Similar to the results from the survey, we found that the biggest reason people don't donate is they feel they do not have enough money. Other than that, a few people said they are more likely to donate if they see a cause that they can relate to, and if they know specifically what cause they are donating to. They also said that they prefer donating when they can see themselves how their money has helped the intended cause. As far as impact goes, we asked them if they would like to know how each charity's funds are distributed, what percentage of funds goes into administrative overheads and how much goes towards actual causes. However, most of them said they did not care much about that information and would prefer to just get some updates in the form of text, pictures or videos. A lot of them said

they do not trust big charitable organizations to use their donations properly, and feel more comfortable donating to more localized causes for which they can easily see the impact.

Charity Interviews

We conducted interviews with 12 charities of different sizes and reach to gain more insights into the donation process. We interviewed a lot of local charities since one of our focus areas was local charities. We asked them about how they receive donations, mediums they use, their strategy to seek new donors and retain old donors, etc. We also asked them if they tell the donors about the work they have done and how they have used their donations. To get more ideas about how we could increase transparency and engagement with the donors, we asked them if they could do anything additional from their end.

For local and smaller charities, a lot of their donors come from social media campaigns, word of mouth, emails and snail mail. For retaining donors, charities usually send a reminder once every few months asking them to donate again. To show what the charities have used donors' money for, they usually have a periodic newsletter that's sent to the donors with details. Some of the charities also send the information through emails. Three charities said they share photos and updates on social media when they can which garners a lot of likes from their followers. One of the charities mentioned that they tell the donors specifically what cause they are asking donations for, and in their experience this makes them more comfortable while giving donations. The Cal Calling Center and a couple of other charities told us about how donors are more willing to give smaller periodic donations rather than a bigger amount at once. We asked the charities if they would be willing to use a mobile application to help get more donors through small regular donations and majority of them were very interested in learning more about it.

Industry Expert Interviews

We talked to two people who work in the philanthropy department of public and private institutions. They confirmed that engagement of donors is a big issue and most charities are aware of it and are trying to solve it. According to them, a few reasons why 20% people account for 80% of donated amount are less job security, a move towards gig economy, less disposable income and a cultural shift. They also talked about how difficult it is to ensure that each donor's contribution is used exactly for the cause since there are overheads.

Key Takeaways:

1. Similar to the results we got from our survey, we found that people do not donate enough because of less money and lack of transparency from the charities.
2. They would be willing to donate more if they know the exact cause they are donating to and would prefer to get updates in the form of pictures or videos.
3. They do not trust global charitable organizations and prefer local charities.

Competitive Analysis

Through our preliminary research, we had realized that our neither the idea of rounding user's change nor that of making an app to donate to charities was a novel one. There were more than a handful of websites and apps which claimed to use either one or both of those ideas. Hence, we identified our competitive landscape as comprising of organizations (websites or apps) which either utilize:

1. The idea of rounding up/down the user's spare change in order to utilize it for a certain function. Apps and websites like ChangeEd, Acorns, ChangeUp utilized this concept.
or,

2. The idea of being able to donate to charities. Apps and websites like donateyourchange.com, roundupapp.com and givetide.com fall under this umbrella.

We also found that some of the above mentioned apps and websites utilized the collected change for donation purposes.

Of the 15+ apps and websites we reviewed, we found only two (Acorns and ChangeEd) to be well designed and implemented. Acorns uses change for investing in the stock market whereas ChangeEd uses the change collected to pay back student loans.

Analysis of the apps which used change for donation purposes gave the following results:

Positives	Negatives
All the apps provided tax documentations for the donations made through the app	Most apps allowed donations to only one charity
Use of external APIs like Plaid and Stripe to handle credit card information to maintain security	There was limited information about the charity available on the app
Some apps tried to include a social element into the donation process	Some apps take you to an external website to complete transactions

At an overall level, we felt that the user interface and user experience of the donation apps was not at par with apps like Acorns and ChangeEd.

Defining the Problem

Although we understood the pain points of the users after our generative research, we wanted to better define the problem we were looking to solve. A major theme that arose during our research was the user's need for "transparency". But what users actually mean by transparency? Are they referring to transparency of investment (things like how much of their money is actually reaches the needy) vs transparency of outcomes (things like what is eventually done with the funds raised)? We feel that it is of utmost importance to find the problem behind the big problem - what is the logic chain that would give support to the intervention we're building?

There is a need to understand why people feel that they lack money, or why they do not feel engaged by the current methods of donations. Getting answers to questions like what users really care about and feel responsible for will help to understand how to build solutions to enable them to make a difference.

Ideation

Through our generative user research, we decided on the problems we wanted our solution to focus on - lack of money, transparency and having specific causes to donate to. Given the time limitations of the final project, we decided to limit our scope to students and young adults.

Personas

Since we were following a design thinking process, we decided to build personas to help us in our ideation process. Each of us individually built two personas each, then we talked about them to the group, collaboratively worked on them and finalized on four personas.

① ONE-OFF DONORS



- OSCAR
- FIN DONATES IRREGULARLY
- DOESN'T CARE ABOUT A PARTICULAR ^{CAUSE} THAT MUCH

- BUDGET IS NOT A CHALLENGE FOR DONATION

GOALS:

HYPOTHESIS -

- ① PROCRASTINATOR?
- ② SOCIAL PRESSURE?
- ③ TRUST ISSUES?

HYP:

- FOCUS ON ENGAGEMENT

② WANNA-BE REGULARS



- PATRICIA
- REALLY CARES ABOUT A CAUSE/ CHARITY
- BUDGET CONSTRAINTS
- DONATES WHENEVER FINANCIALLY POSSIBLE
- STRONG ADVOCATE FOR THE CAUSE

CHALLENGES:

- MONEY

GOALS:

- RAISE MONEY FOR THE CAUSE

HYP:

- ① FOCUS ON ROUNDING UP

③ LAPSED DONORS



- RYAN
- DONATED IN THE PAST BUT HAD A BAD EXPERIENCE
- DOESN'T TRUST CHARITIES
- NO FINANCIAL CONSTRAINTS

HYP:

- ① FOCUS ON LOCAL CHARITIES
- ② SHOW IMPACT

④ "SHOW-OFF" DONORS



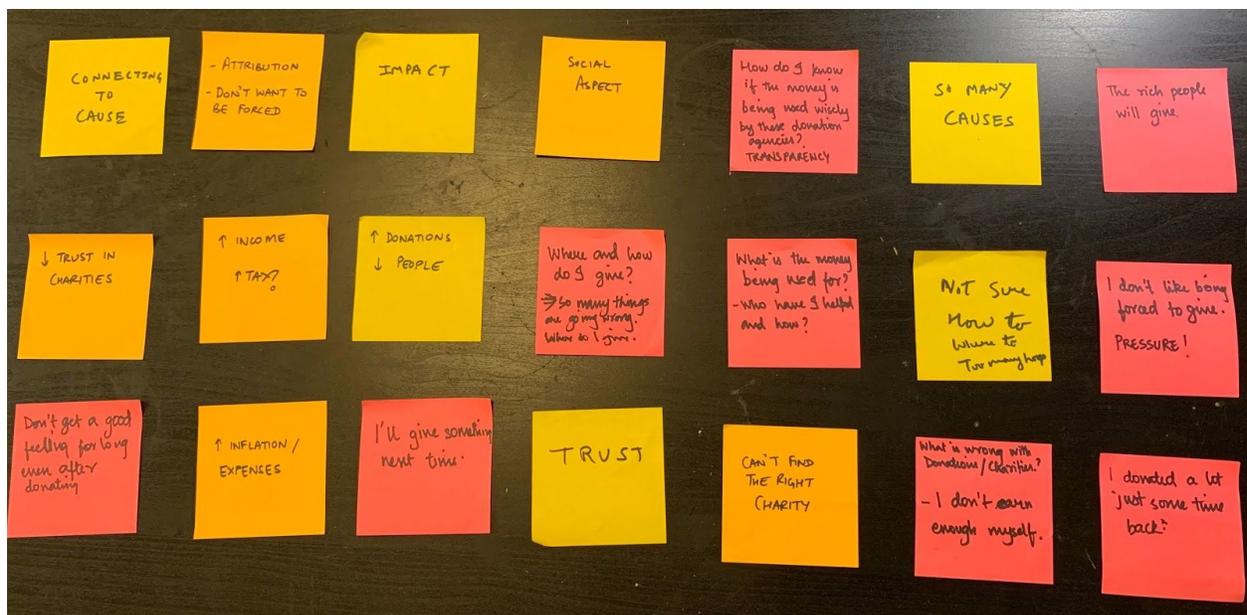
- LAURA
- DOESN'T SUPPORT A PARTICULAR CAUSE THAT MUCH
- WANTS TO HAVE A PHILANTHROPIC IMAGE IN SOCIAL CIRCLE
- WANTS TO ORGANIZE GROUP FUND-RAISERS

HYP:

- ① SOME SOCIAL ASPECT TO THE APP?

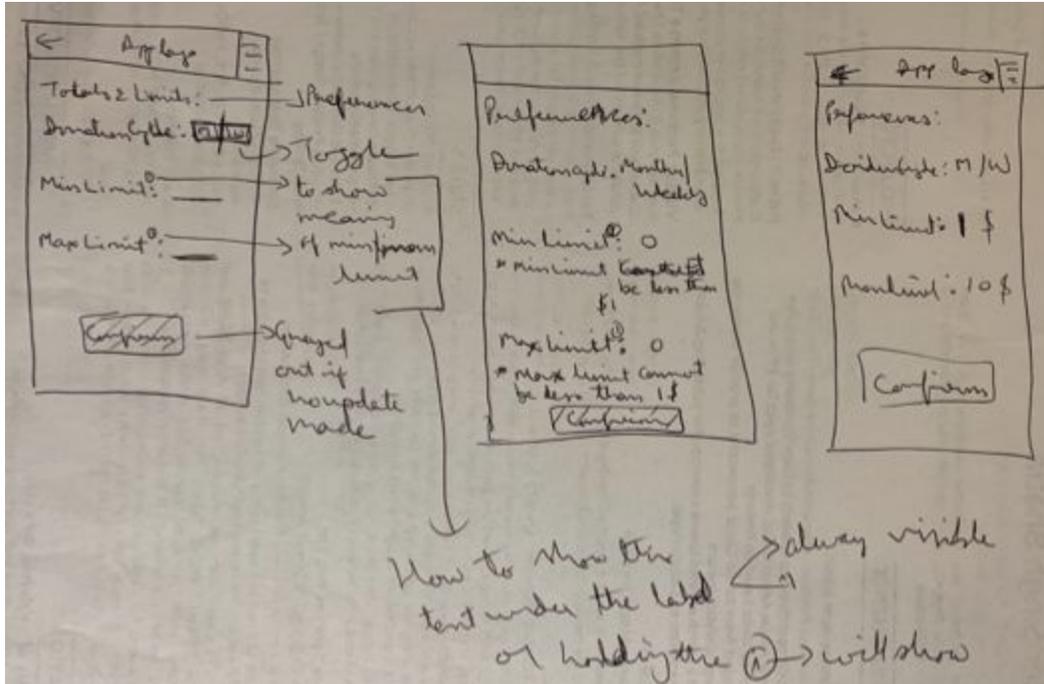
Ideation Process

Once we had our personas, we went through an ideation session to come up with ideas and generate features. First, we individually came up with solutions to the problem in hand. Then we presented them to each other and worked together on them by categorizing them into our focus areas and refining them. Once we categorized our ideas, we started with the feature generation process for our solution. We brainstormed about what is most important to our core concepts and kept only the features that were essential to it.



Design and Prototyping

We started creating low fidelity prototypes for our application based on the features finalized from the ideation session. Once we had the sketches, we went through the user journey to refine the prototypes. We looked at a few existing mobile applications to get some ideas about Charity Wallet. We liked the UI of Nike Run Club and took a few elements from it. We also considered gamifying the donation process by giving donors awards for certain achievements, but we got mixed reactions for it during our



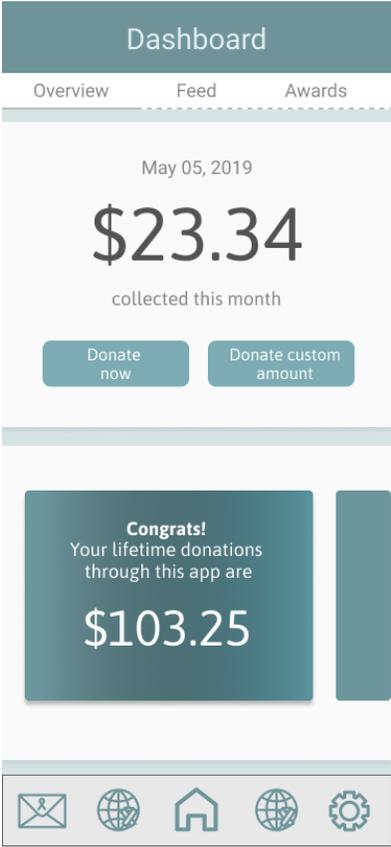
Keeping our core concepts in mind, we decided to have a change-accumulator based donation application. We envisioned users would sign up with their bank accounts, and we would round each of their transactions and collect the change. The users would be able to select drives hosted by charities that have specific goals, e.g. Help the Homeless on Telegraph Ave. Users would be able to select one or multiple drives depending on their interests. We would also provide them with a list of recommended drives based on the causes they care about. Once the change would reach a small amount (\$5) or at the end of a calendar month, whichever comes first, the amount would be automatically donated to the selected drives. We give the users the option to select global charities, but we have more local charities on our app since we want to help connect local charities with potential donors.

Another fundamental of our product is user engagement. Hence we decided to implement a feed where donors would get updates from the charities about the drives they donated to. The users can also see important statistics on their dashboard, like the

lifetime donations through the app, number of drives supported, etc., which would make them feel good about their donations.

We used behavioral economic principles while defining our features - small amounts like the change that accumulates to a sum of \$5 doesn't feel too heavy on the pocket, but when a lot of people start donating such small amounts, it makes a difference to the charities. We also give the users options to set various limits, including the maximum monthly donation amount, the donation cycle, etc., but have set defaults so that the user thinks twice before changing them.

After low-fidelity prototypes, we moved on to creating high-fidelity prototypes. We used Figma for the process so all of us could easily collaborate. Similar to low-fidelity prototypes, we talked to each other and 2 more users to refine our prototype better, especially in terms of the aesthetics.



Usability Testing

We conducted usability testing in various stages of designing and building the app. We got feedback from the users, worked on the shortcomings and did the whole process again. We first conducted it with our high-fidelity prototypes, and then with our functional app. We asked the users to try to go through the app and try its various flows. We noted what was the level of ease/difficulty that they faced while trying different flows, and if there were particular areas where they needed explanation. We also asked for their feedback on the look and feel of the app. There were a few features we had to modify after conducting usability testing:

1. For a first time user without any context, it wasn't very clear what the app is aimed to achieve. We added a few introduction screens that would appear when the user installs the app for the first time.
2. When a user clicks on the heart icon in the drives page, it wasn't clear that selecting it meant selecting the drive for donation. We added a toast message indicating the same.

Other than that, there were just a few minor changes we had to do.

Development

Technical Architecture:

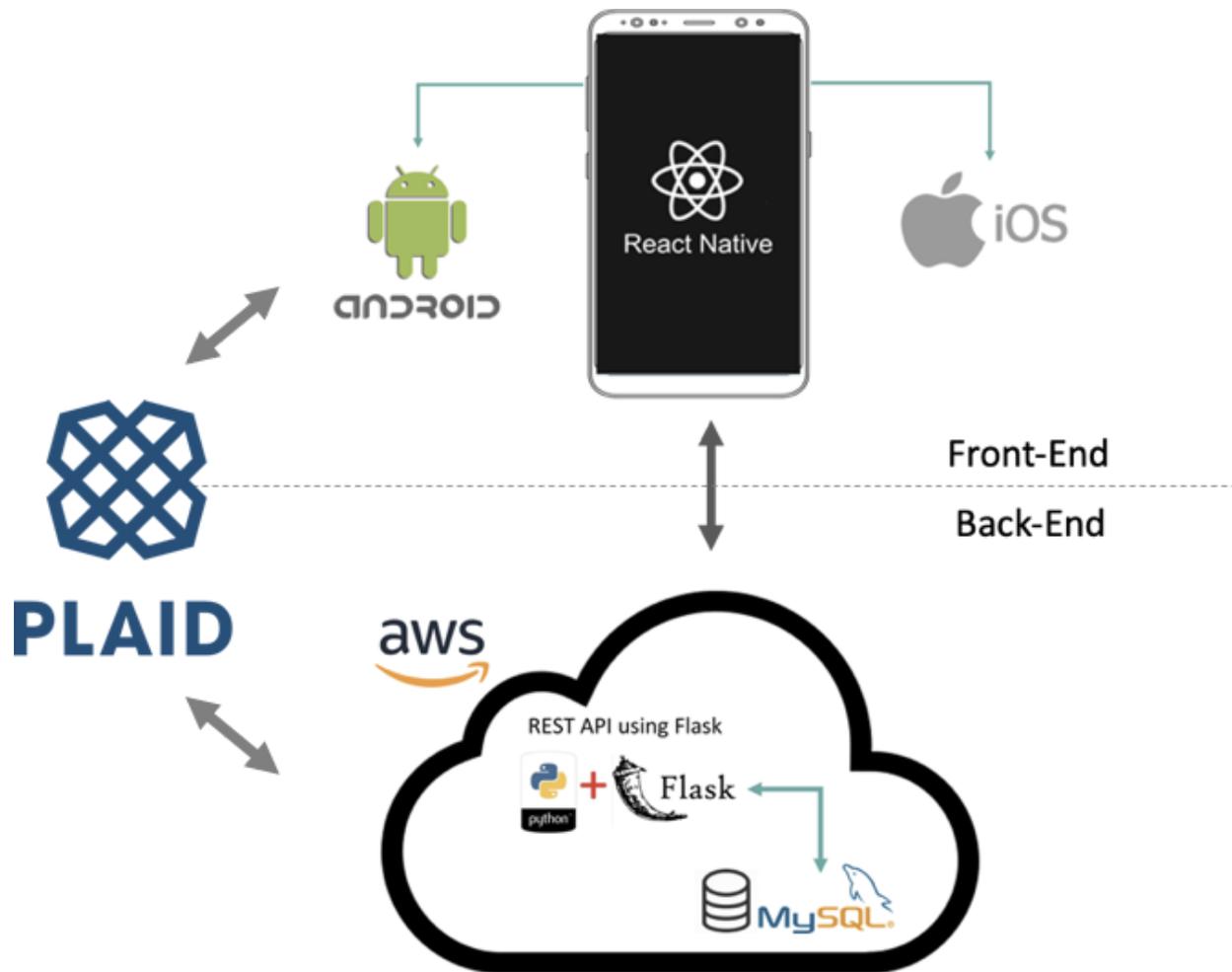
The Charity Wallet Platform, guided by the “API First Paradigm”, has been developed with our API as the core component. All our core business logic has been enabled by workflows defined in the API. This approach enables the Charity Wallet platform to be integrated with not just our different front end clients like -

- Websites
- Charity Management Systems
- Other Apps like Venmo, Uber
- Social media platforms - Facebook, Instagram and Twitter
- Crowdfunding platforms like GoFundMe

The API has been ably enhanced by our Charity Wallet app, a multi-platform applications that is designed and developed after extensive user research and provides a simple and fluid way for donors to engage with their favorite charities, donate to the causes that they most relate to and use their change to bring impact in the world.

Charity Wallet is a platform product split into three major components -

- The Frontend Mobile App
- The Backend Restful API
- Third-party Integrations



Our choice of this architecture was motivated by our long-term vision of developing a platform that is accessible, scalable and allows donors to support their favorite causes not just from Charity Wallet app but from any system they like.

Frontend Component:

The mobile app has been built using React Native, an open-source mobile application framework created by Facebook, allowed us to develop a platform independent app that can be used on Android and iOS.

We made this choice for multiple reasons:

- Apps built using React Native have a native feel without writing platform specific native code using Swift or Android
- Syntax is based on Javascript, CSS-like styles and JSX which made it easy for team members with web development experience to quickly get started with development.
- Supports the development of both Android and iOS applications through a single codebase, only needing developers to add platform specific code for a few exceptions.
- Provides a lot of boilerplate code to easily get started along with iOS and Android simulators that have hot reloading capabilities to check the change real-time.

We built on top of React Native boilerplate code and developed reusable components that appeared in multiple screens, setup a navigation stack using Redux and implemented individual sections of the app with multiple screens styled according to the designs we created based on user research. In this process, we also leveraged many React Native libraries for developing components and functionalities in the app, including but not limited to libraries for the timeline, vector icons, database connections, location services, rendering svg elements, image manipulation, navigation etc.

Backend Component:

Our backend module comprises two major components -

- Python+Flask Restful API
- MySQL database

Flask is an elegant, lightweight yet powerful web framework for Python. Equipped with a powerful request dispatching system (capable of RESTful design), an integrated

server and debugger, and comprehensive and approachable documentation, Flask allowed us to build a robust and scalable API system.

Since we were not dealing with unstructured data, we chose to select an RDBMS system and implemented the database layer of Charity Wallet on top of MySQL server. MySQL is an open-source database that is stable, reliable and provides powerful features like the following:

- Data Security
- Scalability
- Complete Workflow Control

These features enabled use to keep donation records and user transactions in our database securely.

These two components formed the restful API of Charity Wallet platform and we deployed this solution of AWS. We have used AWS-RDS service to host our MySQL database and AWS Elastic Beanstalk service to host our flask server. AWS Elastic Beanstalk was a simple choice for us due to its ease of deployment, and automated configuration setup. The features like capacity provisioning, load balancing, auto-scaling and application health monitoring, enabled our our API to be more robust and scalable.

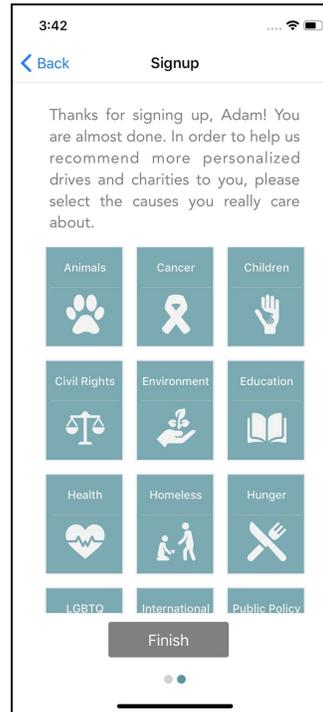
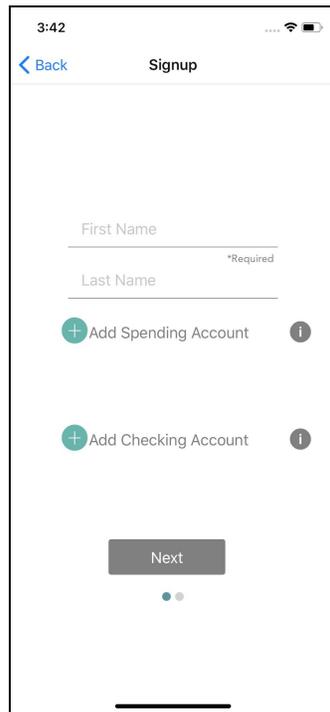
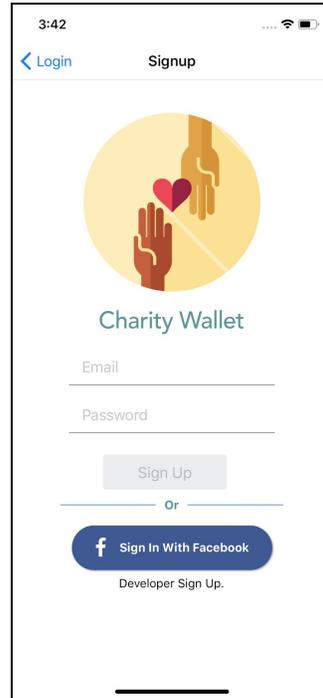
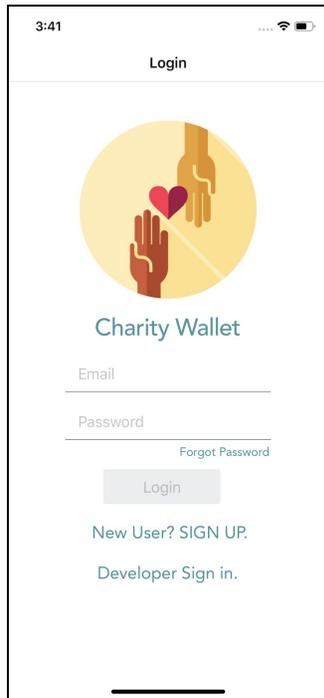
Third-party Integrations:

One of the major technical features we have is the integration with Plaid Service. Since Charity Wallet relies on calculating change from user's transactions we had to setup a mechanism to access a user's transactions and ensure the privacy and security. Considering the time constraints and the estimated effort required, developing our own solution was not a good idea and we opted for a 3rd party solution in Plaid. Plaid provided us with a way to have unified authentication for thousands of global financial

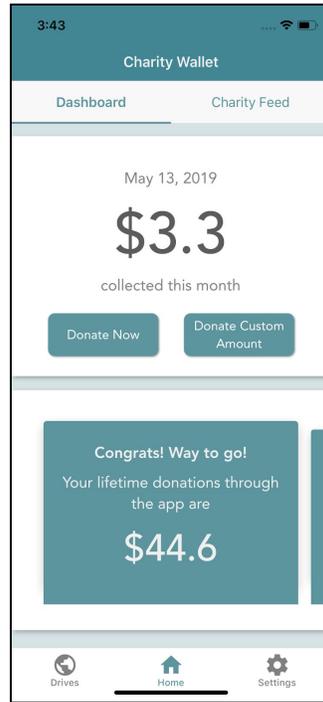
institutions. Once users authorize access to their bank data, using the Plaid API we accessed their transactions information. Plaid, already being used by industry-leading finance applications such as Acorns, Venmo, Expensify, and Stash, provided us a safe, secure and easy to integrate which helped power one of our key features of collecting change from donor's transactions.

Application Flow

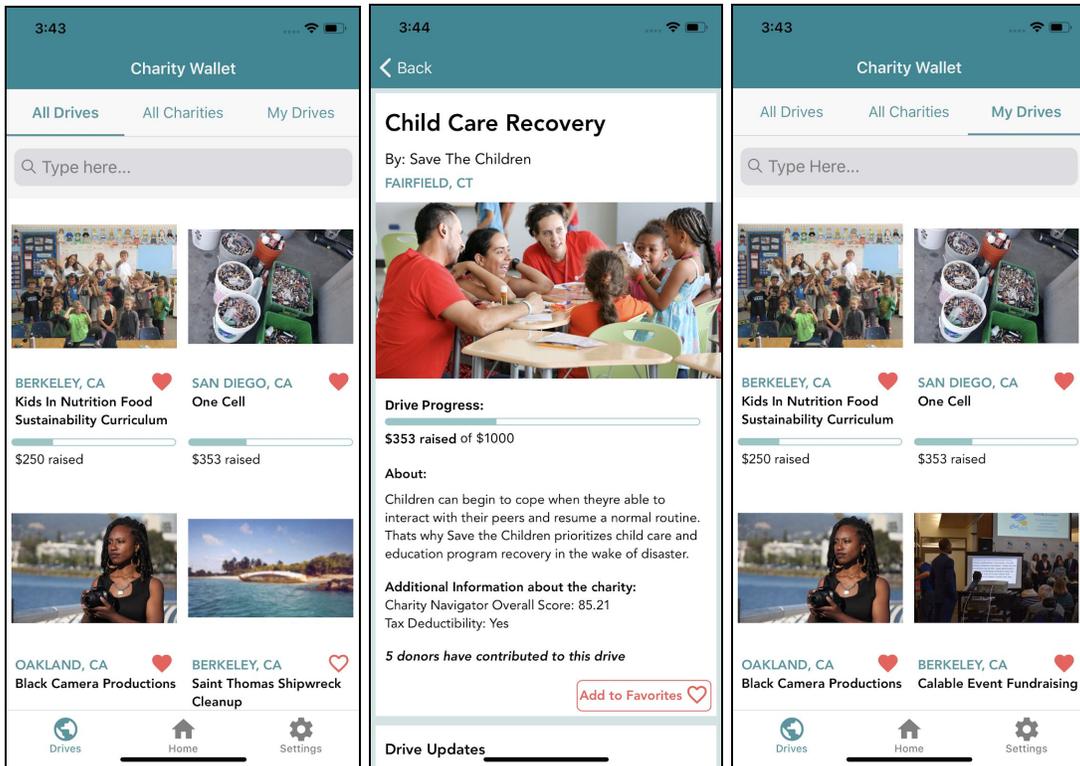
User Signup/Login



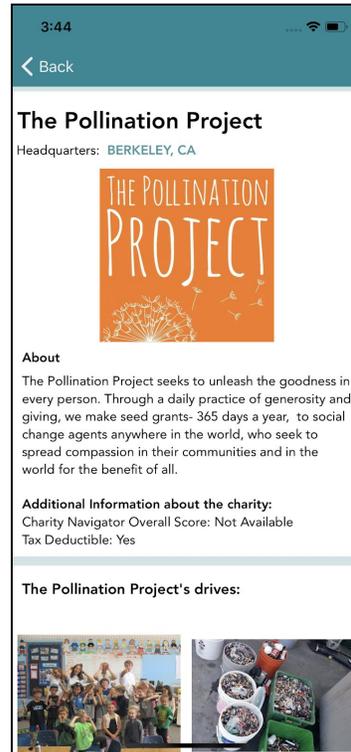
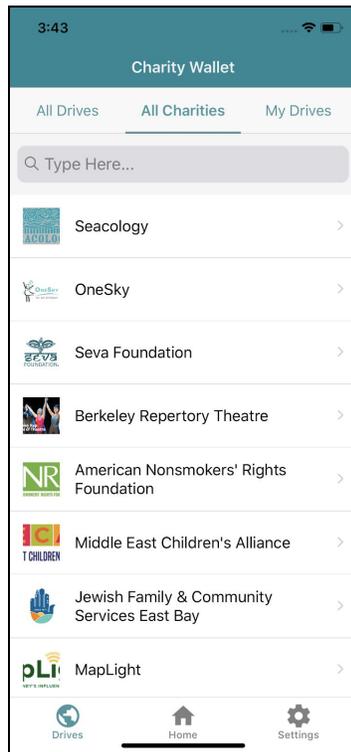
Dashboard



Drive Information and Selection



Charity Information



Donation limits



Next Steps

We envision Charity Wallet to provide donors a compelling experience where they can see the impact that they are able to make by donating their change. To further improve the user experience we have the following features to be incorporated in our platform in future -

- **Improved Personalization:** The drives shown to the user would be more relevant and highly personalized. We plan to employ the power machine learning algorithms to cater more personalized list of drive to donors. Based on their past donations and interaction on the app, we would be training ML models that would power the personalization feature improving the user experience
- **Better Search:** We aim to provide the donors more customized feed and to enable this we will be implementing enhanced search functionality using robust solutions like Elastic Search. Currently the users can only search from Charity or Drive names but in future versions, they will be able to search based on Causes, Location, Description and other metadata.
- **Gamification:** We plan to employ gamification system in our app to make the donation experience more engaging. Currently our user research on this feature is in progress and we have not able to find the best solution. The next steps are to continue the user research on this feature area to design and develop a solution that enhances user experience on our app.
- **More Integrations:** Powered by our API, we plan to integrate with social media platforms, app based service provides like Uber, Doordash etc to provide a holistic experience to donors. We also aim to integrate it with Donation Management System to help charities engage better with their donors. Another area we aim to explore is integration with next-gen payment platforms like Venmo, G-Pay, Apple pay.