

# CS554 Furends - Fall 2018

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**Abstract**— Many dog owners have been worried their dogs might be lonely. Here is Furends - an social networking application for pet owners - that helps you find furends to have playdates with near you. Furends also offers an easy, visual way to monitor your dogs weight, medications, exercise and whatever else comes to mind. Users can use it to jot down when your dog does something so adorable and share it.

## I. PROJECT DESCRIPTION

My inspiration comes from my own experience as an owner of a golden retriever. Dogs are pack animals and just like human, they need social life with dogie friends to develop their "personalities". It has great benefit if dogs can play with other dogs during their puppy period. Furends is the application for pet owners to find other pet owners nearby. With Furends, people can set up playdates for their furends easily. Furends is also a toolbox for pet owners. It can track the medical record and vet information of your pet and it can track the exercise of your pets.

The Furends project follows the five stages of developing an application:



Fig. 1. 5 Steps to Develop an App

## A. Stage 1 & 2- Idea & Needs

The idea of Fruends is to develop an app for pet owners. Furends have 5 core functionalities:

- Sign In & Sign Up:  
Each user of Furends should have an account. User can sign up with email and sign in with existing email and password.
- User Profile and Pet profile:  
This functionality is a e-document for pet owners to store their pet information .
- 1) Pet Profile: Each pet has its own profile including avatar, name, age and detail. Users can record everything including gender, residency and personnalitity of their pet in the detail part.
- 2) User Profile: User can upload and edit their profile in the profile view. The user profile consists of name, phone, email, password and address.
- Walking - Fitness Tracker for Pets:  
The walking functionality is like a fitness tracker for your pets. It records and plot the route on the map when users walking their dogs. The average pace, total distance and duration are shown on the cellphone screen when walking. The information of each walk is saved and can be accessed by user to view, edit or delete. This functionality provides pet owners a way to track their pets' exercise.
- Playground and MyPost:  
As mentioned above, Furends is not only a toolbox but also a social networking app for pet owners to find nearby furends. I call this functionality playground. Here, users can upload posts of to find nearby pet owners and view the moments posted by nearby users.
- Chats:  
To let users connect and communicate with each other and set up playdate, Furends also has a simple messenger called chats

Furends targets on pet owners and here are some possible scenario:

- Users who want their dogs to loose weight: They can add a weight node every week in the weight function

and see the weight change of their dogs directly from the line chart.

- Moving to a new neighborhood: For users who moves to a new neighborhood and want to meet nearby pet owners, playground is the right thing for them. They can explore the moments post by nearby users and easily set up playdate for their pets.

- Project Time line:

- week1- week3: Pick an idea and think about the needs.
- week4- week7: Work on the UI design and drawing the workflow using Sketch.
- week8- week13: Implement the four core functionaliites one by one using Xcode and Swift.
- week13-week15: Test the app on cellphone and write the final report.

### B. Stage 3 - UI Design.

The Furends project consists of mainly five parts - User sign in & sign up, User and Pets Profile, Walking, Playground & MyPost and Chats. The Sketch, which allows vector editing with pixel precision is used to design all UI and icons. The user interface and workflow are shown below.

- Furends Icon:

The inspiration of the furends icon comes from two dogs sitting face to face and hand in hand. The hollow between the two dogs is the shape of cat head. The icon is shown in Fig.2.

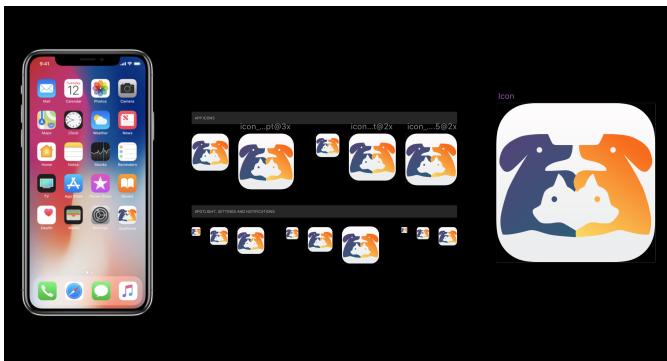


Fig. 2. Icon of Furends.

- UI of User sign in & sign up:

There are three views shown in Fig.3. The first view is the launch screen which users will see when first opening Furends. The second is the sign-in view for returning users. If the user is a new user, he or she can tap the register button and sign up by email on the third view.

- Playground & MyPost:

Playground and Mypost is the social networking part of Furends. In The Playground View, users can view post posted by other users and view the detail of each post by tapping on it. If they find the time and location is suitable for them, they can tap on the send messsge button to start



Fig. 3. UI of User sign in & sign up. The first view is what users will see when first opening Furends. The second is the sign-in view for returning users. If the user doesn't have an account, he or she can tap on the register button and sign up by email on the third view.

a conversation and set up the playdate. User can also make a new post by simply tap on the adding button on the top right corner. They can set up the date and time via datetime picker and the location is where the user currently is. MyPost is where users to manage their own posts. They can delete the post by sliding left while holding on the post. Users can view the detail of their post by selecting it and mark it as complete once they finishing the playdate. See Fig.4 & 5.

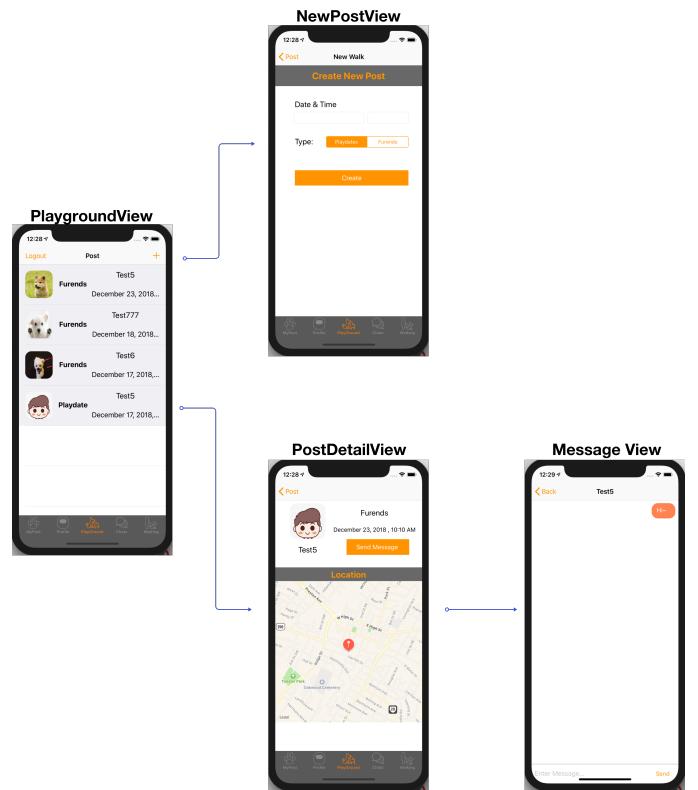


Fig. 4. The playground UI contains 4 views. By tapping on the playground navigation button, user can enter the playground view to see the moments posted by their friends. Tapping on each post users can view the detail and send message.

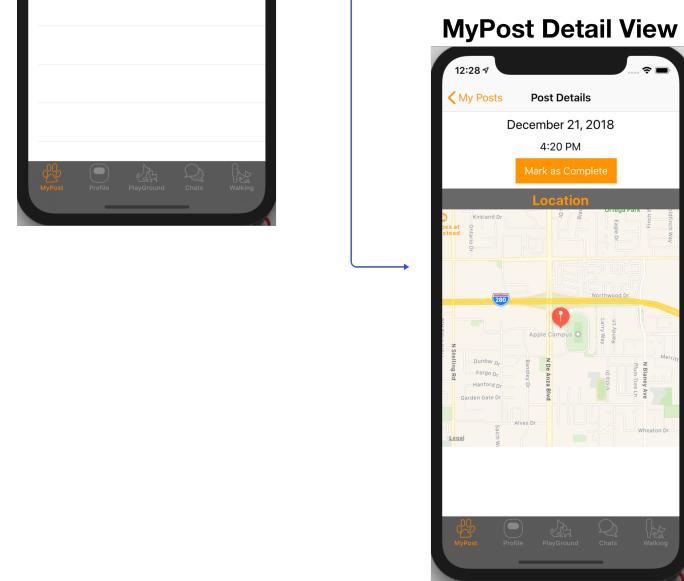
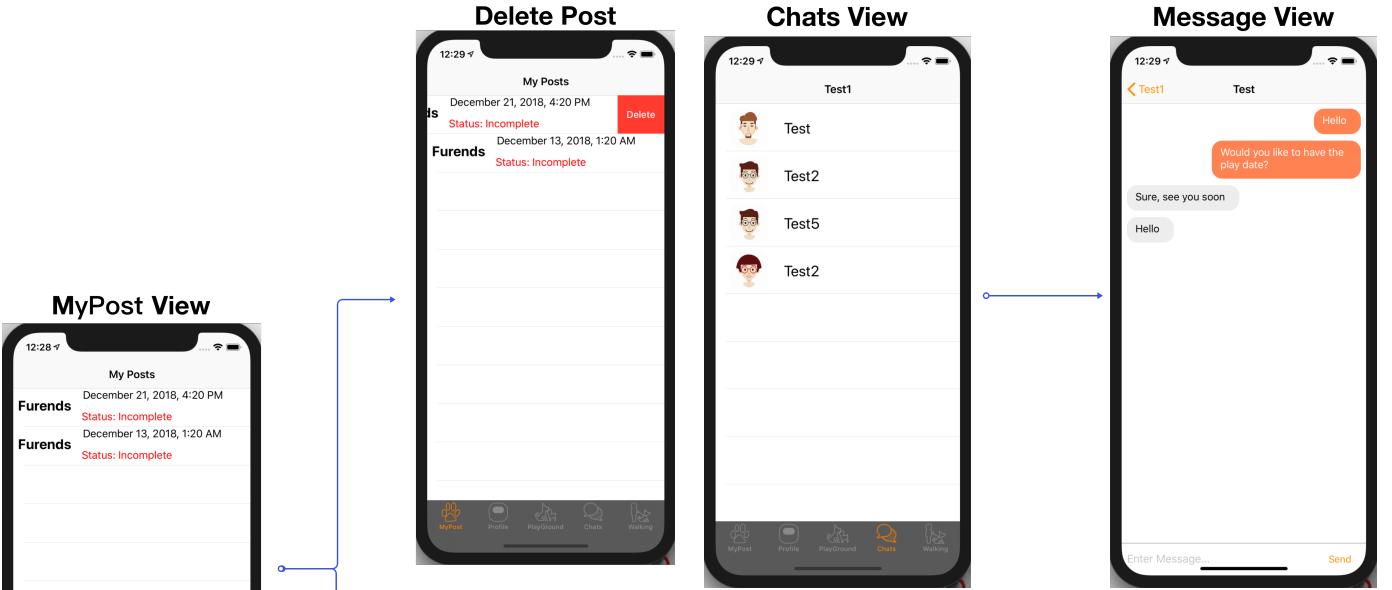


Fig. 5. The MyPost UI contains 3 views. By tapping on the mypost navigation button, user can enter the mypost view to see the posts posted by themself. Tapping on each post users can view the detail and mark it as complete. To delete one post, users only need to slide left and tap on delete button.

- Chats:**  
Chats is a simple messenger that for Furends users to chat with each other. It contains 2 views. First is the chat log view, all existing chats are showed in this view. Second is the message view, it shows the conversation content. See Fig.6.
- User and Pets Profile:**  
See Fig.7.
- Walking:**  
Walking is the fitness tracker of pets. It consists of WalkLogView (shows all history walks), WalkDetailView (shows the detail of each walk, including time, distance,

Fig. 6. The profile UI contains 2 views. First is the chat log view, all existing chats are showed in this view. Tapping on one chat will lead user to the message view, which shows the conversation content. Users can enter text via keyboard and tap on the send button to send messages.

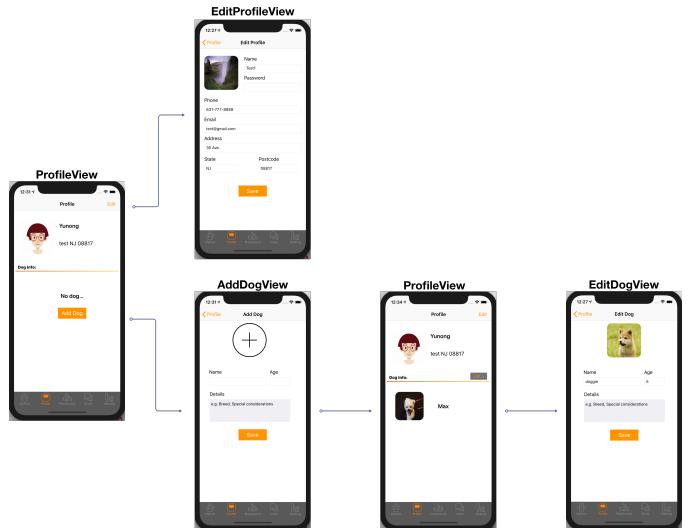


Fig. 7. The profile UI contains 5 views. The home view is what shows up once user logs in. On top is a brief view of user profile. User can edit their nickname and change their avatar by tapping on the edit button. Below is the pet profile. By tapping on the add dog button, user can enter the adding dog view. On each view, user can tap on the back button to return to the previous view.

and duration) and other 3 views for real-time walking route plotting. See Fig.8.

#### C. Stage 4 - The Implementation Stage.

Figure 9 shows all the techniques I used in Furends project.

- Frontend:** I use the Xcode IDE to build the whole project and use Swift4 - a powerful programming language for IOS, MacOS and WatchOS system. The cocoapods is used

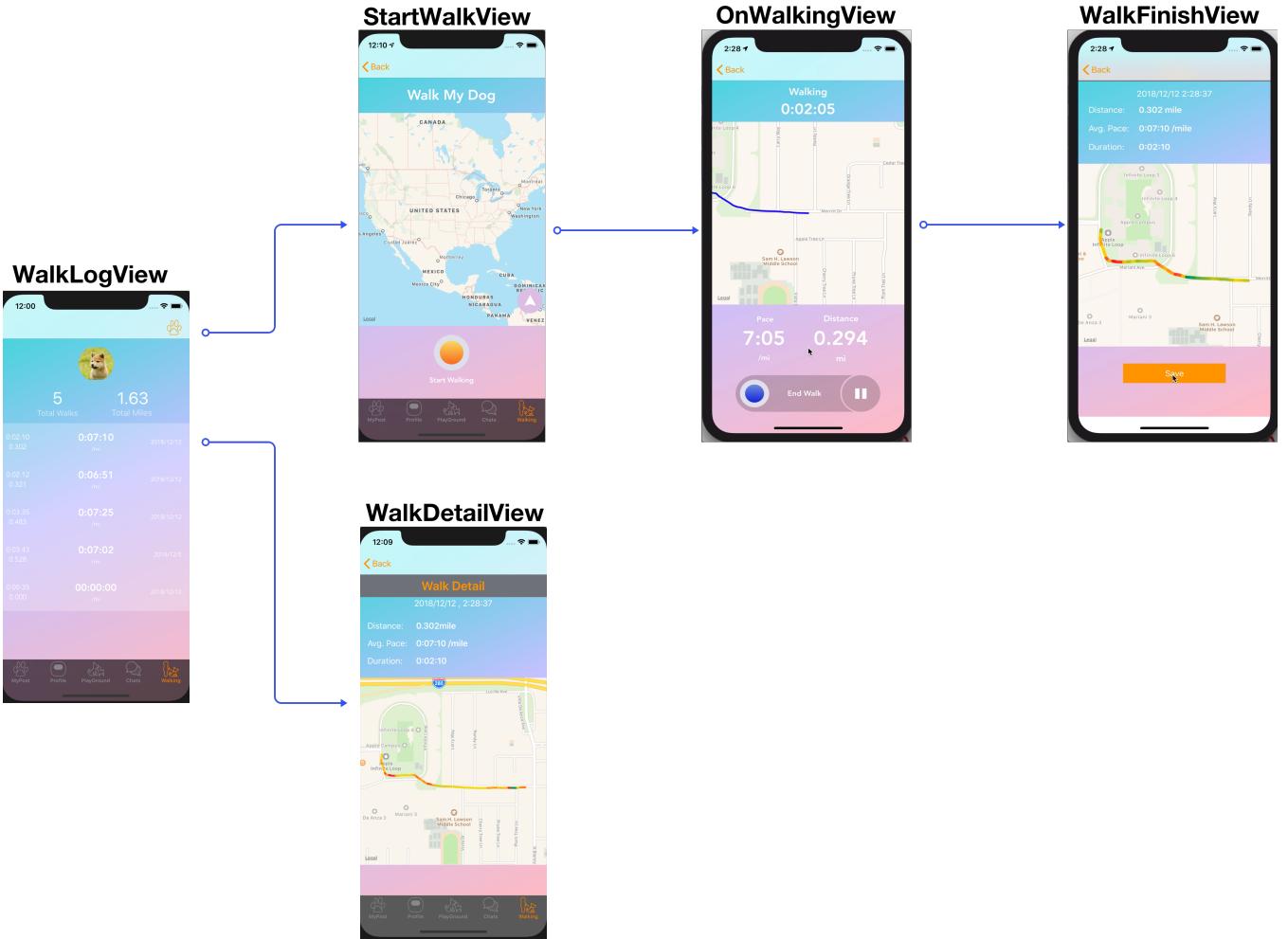


Fig. 8. The walk UI contains 5 views. The WalkLogView is the view shows up once user taps on the walking navigation tab. It shows the avatar of user's dog and the total count of walks and the total distance right below the dog avatar. The history walks are shown below in the descending order of time. Tapping on each walk users can view the detail of the walk. By tapping on the paw button, user can start a new walk and enter the start walking view. Tap on the start button to enter the walking scene. Hold on the stop button to end the walk and choose which pet to walk. Once finished, user can tap on the save button to save the walk or discard it by going back.

as my library manager. For the walking part, I extract location information from the CoreKit. The location data is checked every one second and a threshold is used to make sure that users actually moved in this second. Then the location data is plotted real-time on the map using MapKit. I also add a function to change the color of the walk route, where red represents fast, yellow represents medium speed and green for slow.

- **Backend:** I build my backend with Firebase - backend as service provided by Google. I use Firebase Auth for user authentication and I use the realtime database and cloud storage to store all data generated by Furends. I also set up a analytics dashboard with Firebase. See Fig.11. The dashboard provides a lot insights of my application to help independent developer to improve their application. For example, I can know where my users from, what devices and operating systems they used and which screen view they stay longer from the daily

engagement. With this information, the developer can decide which functionality to improve and what OS to support for the next version.

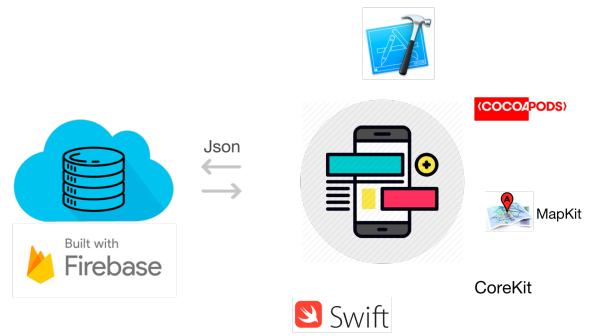


Fig. 9. The architecture of Furends

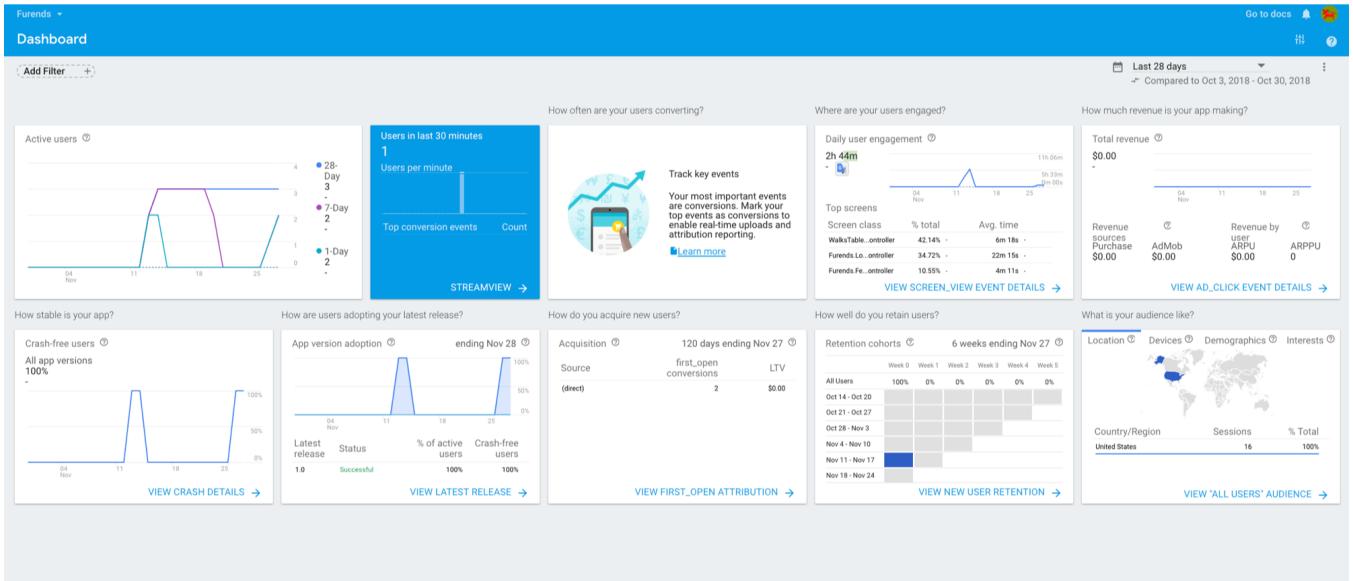


Fig. 10. The Analytics Dashboard of Furends.

## REFERENCES

- [1] parse community, “parse-community/parse-sdk-ios-osx,” Sep 2018. [Online]. Available: <https://github.com/parse-community/Parse-SDK-iOS-OSX>
- [2] Apple, “Swift official document,” Sep 2018. [Online]. Available: <http://swiftpedia.github.io/teaching-app-development-with-swift>
- [3] R. Wenderlich, “raywenderlich website,” Sep 2018. [Online]. Available: <https://www.raywenderlich.com/>