POOCH

Manage Pets
Dog Services
Dog Walking
Dog Meetups
Dog Boarding
Dog Records

Brought to you by:

Shashi Kumar Kadari Mallikarjuna
Sukriti Agarwal
Hamza Mekouar
Brandon Winn
Dhiren Lalwani
Daniel Li

Updates to BRD?

None

Updates to Management Plan?

Gantt Chart, Sprint Retrospective, and Sprint Board

Gantt Chart


491A stops
21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5
Sprint 4
assign
100%
Sprint 4 meeting
100%
Edit Login Page
100%
Edit Signup Page
100%
Edit homepage
100%
Edit user info and do.
100%
Edit Dog boarding
100%
Edit Dog walking
100%
Edit Dog meetups
100%
Edit Dog records
100%
Edit Dog services
100%
Machine Learning da.
100%
End of Sprint #4

User Stories released this sprint

- *As a first time user, I want to create an account so that I can use the web application.*
- *As a user, I want to login to my profile so that I can access my account.*
- *As a first time user, I want to create my profile so that I have my details saved for accessing different features of the web application.*
- *As a user, I want to edit my profile if there are any changes to my personal information.*
- *As a user, I want to create a profile for my dogs to save their information.*
- *As a user, I want to look at different services offered in the web application on the home screen after I log in so that I can choose the service I want for my dog.*

User Stories (Continued)

- *As a user, I would want to be able to choose to adopt a dog service to choose a dog I want to adopt.*
  - i. *As a user, I would want to search for a specific breed of dogs that I am looking to adopt.*
  - ii. *As a user, I would like to get alerts for specific breeds that I am interested in adopting when they are posted for adoption.*
  - iii. *As a user, I would like to look at the price of adopting a dog.*
  - iv. *As a user, I would like to look at the location when the dog is available for adoption.*
  - v. *As a user, I would like to send a message to the person who put up the post for adoption about more details.*
- *As a user, I want to be able to choose the Dog Walking service so that I can let my dog be walked by a dog walker.*
  - i. *As a user, when I select dog walking service, I would like to see a list of dog walkers in my area along with the price they charge per hour and the reviews/ratings of the dog walkers by the users to get confidence on the dog walker with whom I will send my dog for dog walking.*
  - ii. *As a user, I would like to message the dog walker about the time when I want my dog to be walked.*

User Stories (Continued)

- *As a user, I would like to be able to choose a dog boarding service so that I can leave my dog there when I travel.*
  - i. *As a user, I would like to look at nearby dog boarding facilities, people who are willing to take care of my dogs, and dog kennels.*
  - ii. *As a user, I would like to look at the rating of the dog boarding facilities, people who are willing to take care of my dogs, and dog kennels.*
  - iii. *As a user, I would like to message the dog boarding service providers about more information.*
  - iv. *As a user, I would like to look at cost per day for dog boarding.*
- *As a user, I would like to be able to choose to find nearby dog services.*
  - i. *As a user, I would like to look for dog supplies stores near me.*
  - ii. *As a user, I would like to look for dog grooming services near me.*

- *As a user, I would like to be able to view all available dog meetups near me*
  - i. *As a user, I would like to create my own dog meetup and give other people the opportunity to come to mine.*

- *As a user, I would like to be able to upload my pet's medical documents.*

- *As a user, I would like to be able to log out of the web application.*

How many APIs and servers are there?

One API is currently being used to connect the JSX code to the Firebase server and google API is being used for user signup and login.
2 API's are currently being used.

One server is currently being used to host the web application.

However, we will be using more APIs like yelp API to provide recommendations for nearby dog services.

What type of Object Relational Model (ORM), Object Data Modeling (ODM) library or driver is used in the connection of the database to the server? If there are multiple databases, list at least one. If you cannot tell or this element does not exist in the architecture, please state so.

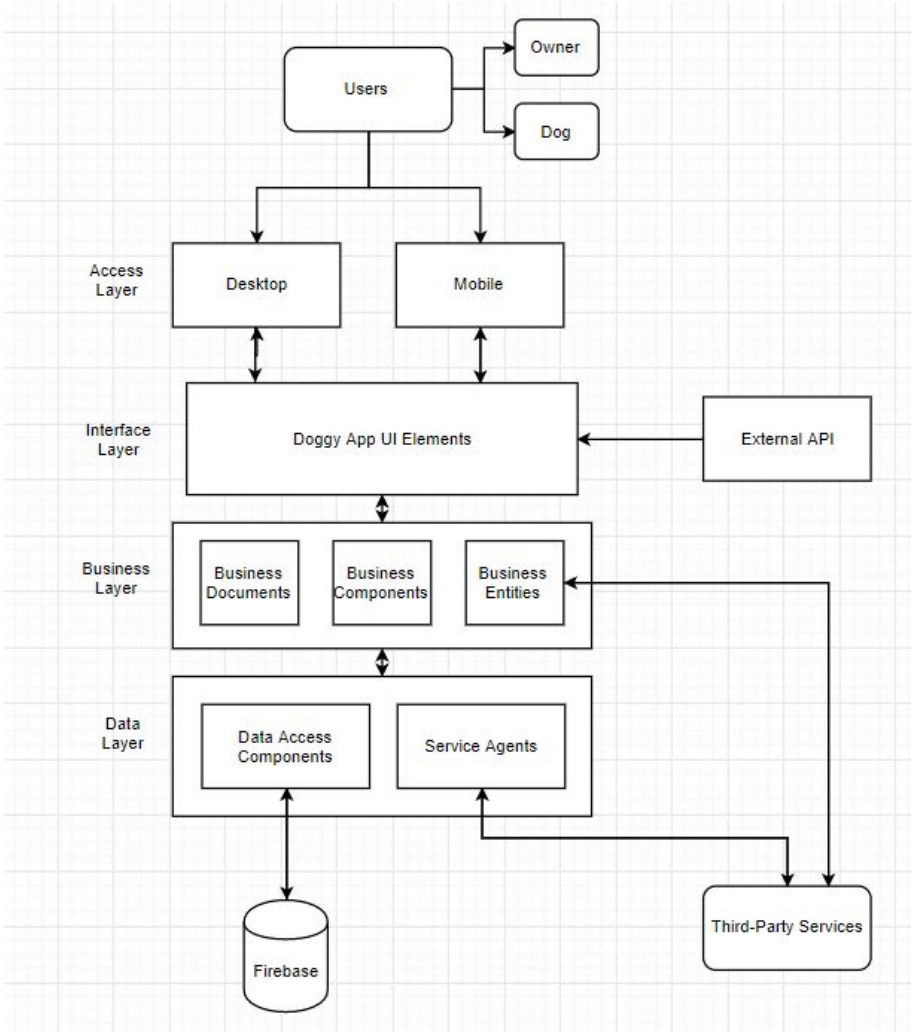
The **Firebase SDK** hosted by NPM is used to connect the database to the server.

Architecture and Major Components

System Component Diagram

LAYERED Architecture approach
4-layer architecture:

1. The access layer
2. The interface layer
3. The business layer
4. The data layer

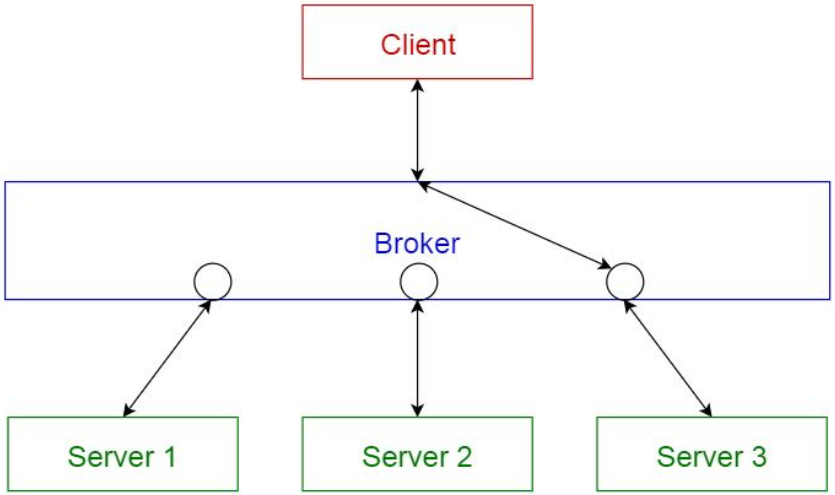


Quality and Quantity Standards

- Layered architecture, so different teams can work on different layers.
- Advantages of layered architecture:
  - Re usage of lower level layers.
  - Layers make standardization easier.
  - Each layer has its own function.
  - Changes made to one layer, does not affect other layers.
  - Addition or modification of functions and modules easier.
- Layered integrated with client-server type of architecture.
  - Divide tasks into smaller units, so services requested can be handled faster.
  - Splitting tasks into smaller threads to faster process a request.

Architectural Alternatives I

BROKER PATTERN



This pattern is used to structure distributed systems with separate components.

A BROKER is responsible for interaction between major components.

Server publishes their capabilities to a broker.
Client requests a service from a broker, broker redirects to the appropriate service.

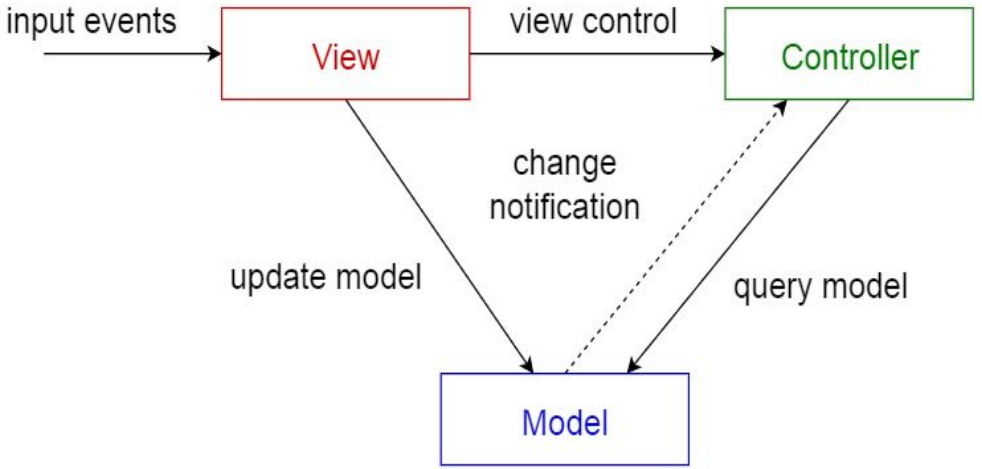
Architectural Alternatives II

MODEL - VIEW - CONTROLLER PATTERN

This model is used when the internal representations of information needs to be kept separate from what is being presented to the user.

Three main parts to the interactive application:

1. **Model:** Contains main functions and data
2. **View:** Displays information to the user
3. **Controller:** Handles user input.



Why not choose these alternatives?

BROKER PATTERN

- We do not plan to use multiple instances of servers for different services, thus this pattern would not be the best choice.
- Message broker softwares are Apache ActiveMQ and RabbitMQ - unfamiliarity to these softwares would make it more difficult to work with.

MODEL VIEW CONTROLLER PATTERN

- It works best for web frameworks like Django.
- It increases the complexity of the code, may also lead to unnecessary updates for user actions.
- Considering a lot of features, it is best to not implement this model.

What is the source of the training data?

We plan to gather training data from Google images. The data we require are pictures of dogs, which are easy to come across.

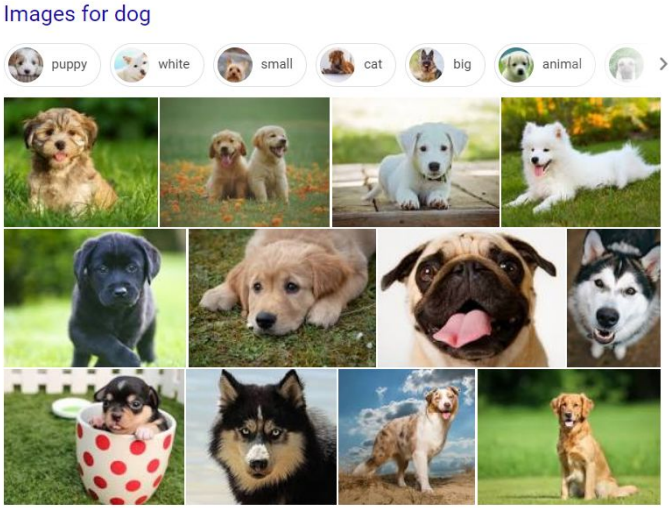
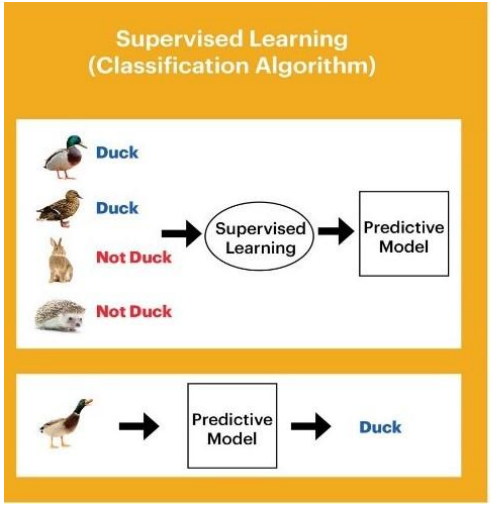


Image Classification

To solve the problem we implement a Machine Learning algorithm that may pose a variety of challenges associated with this task, including viewpoint variation, scale variation, intra-class variation, image deformation, image occlusion, illumination conditions, background clutter etc.



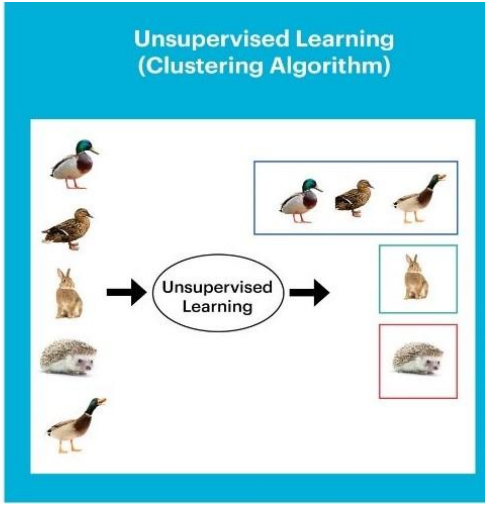
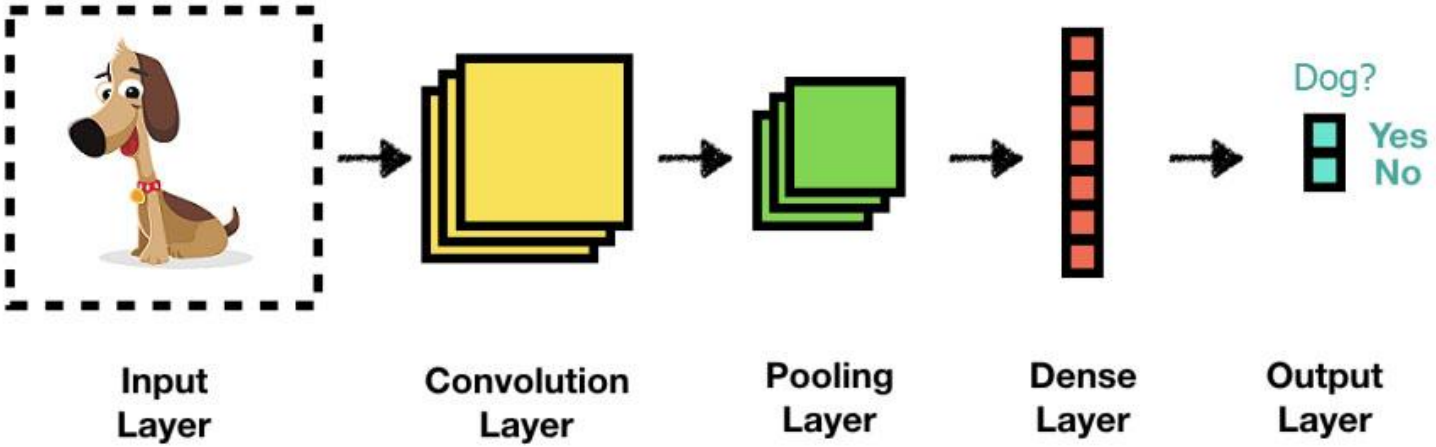


Image Classification Pipeline Steps:

1. Our input is a training dataset that consists of *N* images, each labeled with one of *K* different classes.
2. Then, we use this training set to train a classifier to learn what every one of the classes looks like.
3. In the end, we evaluate the quality of the classifier by asking it to predict labels for a new set of images that it has never seen before. We will then compare the true labels of these images to the ones predicted by the classifier.

Convolutional Neural Networks “CNN”

Convolutional neural networks, which are a clever way to reduce the number of parameters. Instead of dealing with a fully connected network, the CNN approach reuses the same parameter multiple times. The big idea behind CNN models is that a local understanding of an image is good enough. The practical benefit is that having fewer parameters greatly improves the time it takes to learn as well as reduces the amount of data required to train the model.



How does the team plan to deploy the machine learning model?

We are currently planning on deploying the machine learning model as **main server code** in JSX. As this prohibits the team from using the vast array of well-developed Python libraries, we will look into NPM packages that translate Python code into Javascript.

What machine learning deployment architecture alternatives has the team considered?

- Google Vision API
- Firebase Machine Learning Kit
- Python transcompiler

Machine Learning and Benefits

-Pooch will use **Google's Cloud Vision API** to derive information from the images our users upload to the site. This will allow the integration of several security features which would otherwise not be possible for a small project.

a) Cloud Vision will ensure the profile pictures of owners are people and the profile pictures of dogs are actually dogs. This will reduce instances of troll accounts.
b) The API will help identify inappropriate content.
c) Duplicate photos could be detected to catch fake users stealing the profile pictures of other users.

This Cloud Vision API mainly works with the neural networks Machine learning model.

Neural networks are a set of algorithms, modeled loosely after the human brain, that are designed to recognize patterns. They interpret sensory data through a kind of machine perception, labeling or clustering raw input. The patterns they recognize are numerical, contained in vectors, into which all real-world data, be it images, sound, text or time series, must be translated.

How many total user features are there?

There are currently a total of 10 features offered to the user through our web application.

1. User signup
2. User Login
3. User profile
4. Pet Profile
5. Dog walking
6. Dog boarding
7. Dog meetup
8. Dog services
9. Dog Records
10. Logout

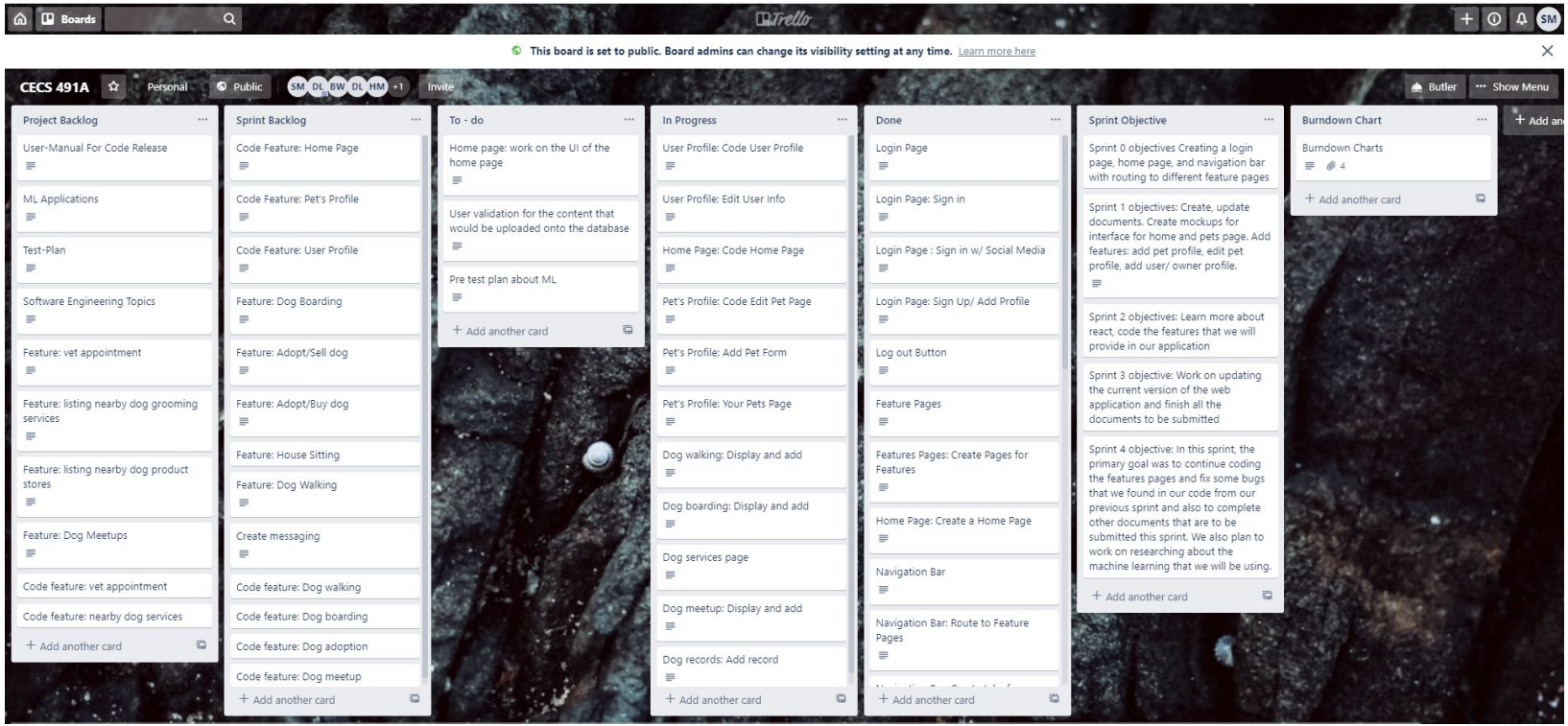
Sprint #4 Summary

Sprint #4 Goals

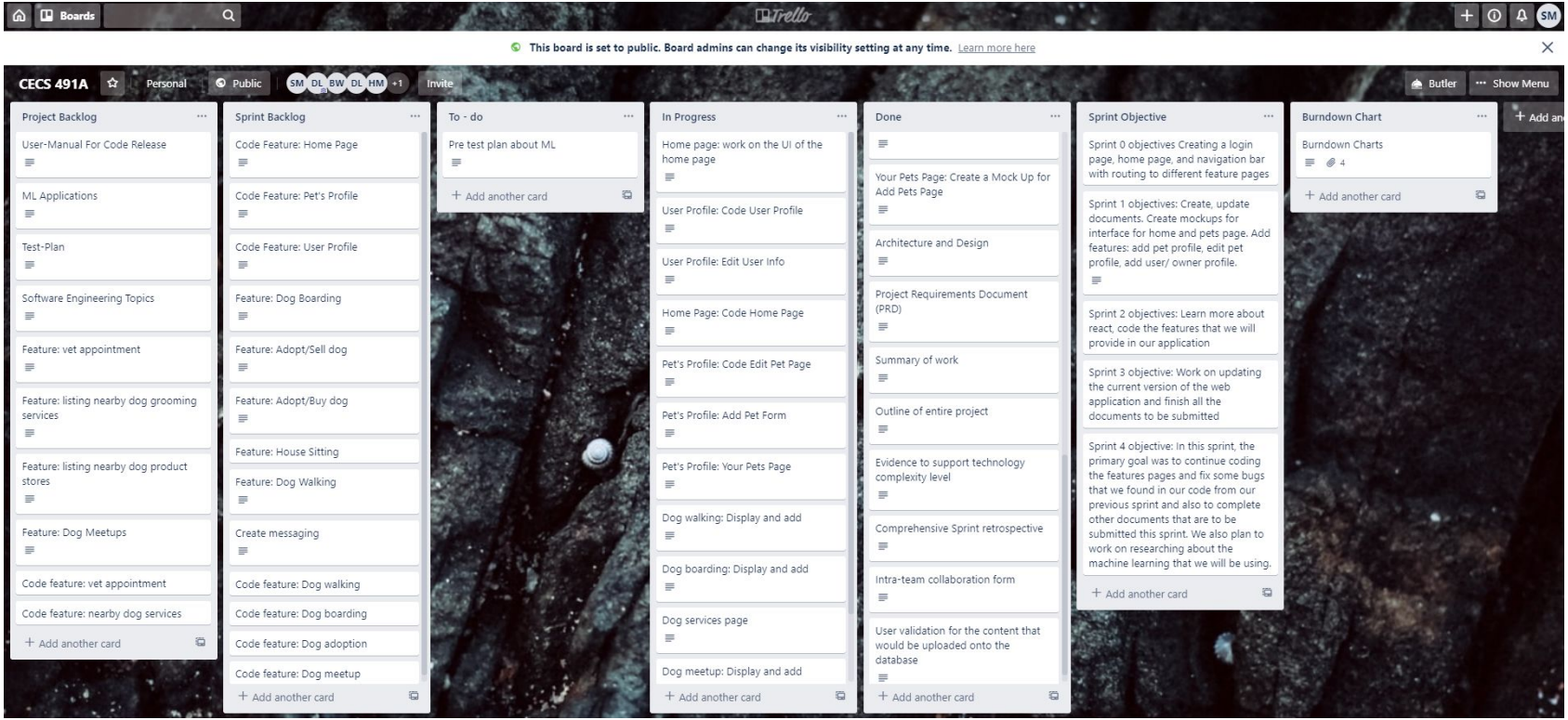
- The primary goal of this sprint was to continue coding the features pages adding visual appeal and fix some bugs that we found in our code from our previous sprint.

- We also planned to continue our research about the machine learning model that we will be using.

Sprint Board - Trello (Before)



Sprint Board - Trello (After)



BURNDOWN CHART

Sprint #4 Retrospective

Did we meet our sprint goal?

Yes, we finished all the tasks that was planned for this sprint on time.

Sprint Velocity(current)

- ★ **67 points were planned** in this sprint.
- ★ We were able to **complete 67 points** on time.
- ★ Commitment per person every week = 5 hours.
- ★ Team commitment this sprint= 60 hours.

What worked well in the sprint?

The right amount of tasks were assigned in this sprint which could be completed in the given timeframe. There was communication between members for finishing tasks.

What could be improved?

Provide more time for testing the code we wrote. Prioritize the basic features to provide complete functionality to the web application.

Sprint #4 Retrospective (continued..)

How did we decide user stories with the highest priorities?

We decided based on the survey that we conducted.

What is the approx. number of In Progress user stories?

There are approximately **7 user stories** in progress.

How did the burndown chart look?

The burndown chart was not exactly linear because some progress was based on user feedback, which took time to collect and review. There was also a learning curve. However, we were able to finish all the tasks.

Code Section

How many clicks to reach a certain feature?

We believe on making our application quick and easy to use so it takes **no more than three clicks** to obtain service of each feature provided. If you start at the Login Screen, the number of clicks to reach a certain feature:

Homepage- 1 click
Your Pets- 2 clicks
Dog walking- 2 clicks
Dog Boarding- 2 clicks
Dog Services- 2 clicks
Dog Meetup- 2 clicks
Dog Records- 2 clicks
Logout- 2 clicks

Platform required to experience the released code

Our web application can be accessed through the web page on a laptop or a computer.

Has the code been reviewed?

Yes, it has been reviewed

Has the code been tested?

Yes, it has been tested.

User Manual for the Code Release

Introduction

Welcome to Pooch!

The dog focused petcare web application which plans to become an all-in-one dog service application, for everything related to pets.

Available for all the users, whether it be dog lovers, dog owners, people who wish to adopt dogs, and/or dog service providers.

URL for Pooch:
https://cecs-491-1934c.web.app/

New Users: Register / Sign Up

- The website is hosted online using Firebase.
- The way users can access our web application is through the link provided on the board and in the previous slides.
- The ways to **sign in** as a NEW USER for our application is either:
  - Sign up directly as a new user.
    - Type in your valid email address and a suitable password to enjoy the features.
  - Sign in using the Google API (an additional feature our application provides)
- Either way the user signs in, it takes the user to the owner profile page.

Existing Users: Log in

- Existing users type in the correct URL.
- The ways to **log in** as a registered USER for our application is either:
  - Log in directly -
    - Type in your registered email address and the correct password to enjoy the features.
  - Log in using the Google API, if your account is validated and identified by Google service.
- Either way the user logs in, it takes the user to the owner profile page.

Home Page

Once the user login to the web application, he/she will be taken to the home page.
User can also go to this page by clicking the **Pooch logo.**

- In this page, the first time user **creates a profile**.
- If the user is not a first time user, then the user's information will be displayed.
- The users can **edit** their personal information in this page.

Your Pets

The user can navigate to this page by clicking the **Your pets** tab in the **Navigation bar.**

- The users can **add** the basic information of their pets by clicking submit button.
- The users can also **view the list of pets** they added to this application in this tab.
- The users can **edit** their pets information in this page.

Dog Walking

The user can access to this page by clicking the **Dog Walking** tab in the **Navigation Bar.**

- The user can search and choose from the **Local Dog Walkers** list as he/she prefers.
- The user can decide on which **Dog Walker** he/she wants and also contact the walker using (phone number) to make an appointment.
- The user can also register as a **verified** dog walker in this page.

Dog Boarding

The user can access to this page by clicking the **Dog Boarding** tab in the **Navigation Bar.**

- The user can search and choose from the **Local Dog Boarders** places as he/she prefers.
- The user can decide which place is more convenience based on its price and other factors.
- The user can also register as a **verified** dog boarder in this page.

Dog Services

The user can access to this page by clicking the **Dog Services** tab in the **Navigation Bar.**

- The user will be able to choose from multiple options of Dog Services:
  - **Local Dog Supply Stores**
  - **Local Dog Grooming Services**
  - **Local Adoption Centers**
  - **Local Vets**
- The user can **search** or **filter** the products and services that best suit them from price, location and quantity

Dog Meetup

The user can access to this page by clicking the **Dog Meetup** tab in the **Navigation Bar.**

- User will be able to **create a post** that is shown in an underneath grid about their meetup
- User will **input fields** related to post consisting of:
  - Date/ Time
  - City, State, Zip Code
  - Description
- User has the option **delete** post by **pressing "X"** next to post they created

Dog Records

The user can access to this page by clicking the **Dog Records** tab in the **Navigation Bar.**

- User will be able to **Add Documents** by pressing “Add Document”
- User will be able to upload any .docx/ .pdf/ .png, etc. from their computer

Log Out

The user can access to this page by clicking the **“Logout”** in the **Navigation Bar.**

- User will be able to sign out securely by clicking “Logout”
- User will be returned to **Login** page and be prompted to log back in in order to access the web app's features

URL for Pooch:

https://cecs-491-1934c.firebaseapp.com/

End of Sprint 4 Presentation