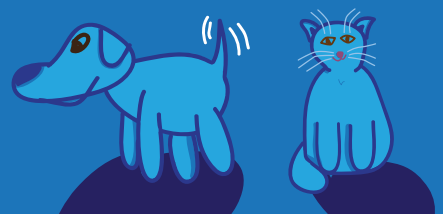


wag-n-purr

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Wag-n-Purr Specifications

Wag-n-Purr is an iOS 7 application that helps motivate and empower new and seasoned pet owners to engage in novel and fulfilling activities with their pets. The application utilizes contextual aware information and a learning algorithm to recommend activities tailored to fit the owner’s busy lifestyle and the particular needs of their pet.

The overall goal of this application is help pet owners become more engaged and informed in the care of their pets to help their pets to live long and happy lives.

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1 Document Overview

This document is intended to serve as a detailed specification for the development of the Wag-n-Purr application.

This document is not intended to serve as a style specification document. Instead, it defines the behavior and flow of the application, focusing particularly on the user interface of each application screen.

In addition to describing the application's behavior, this document is intended to capture and rationalize design decisions, relating them back to the direct needs of the target users. We begin by introducing the problem and process, then follow with a detailed description of the application and rationale for its design.

1.1 Document Audience

The intended audience for this document is an iOS developer and project manager. Additionally, designers who work on future additions or changes to the application will be able to better understand design decisions by reading this document.

1.2 Project Scope

In this section, we list the features, elements, and behaviors that are in scope, as well as those that are out of scope and not fully described.

1.2.1 In Scope

The following areas are in scope and covered by our specification document:

- The behavior of this application specifically as an Apple iOS 7 iPhone application (the specific variations required by other mobile or tablet OSes are not included)
- First launch behavior
- Adding a new pet
- Manually requesting and choosing from activity recommendations
- Ongoing activity with timer
- Activity debrief

- Viewing basic dashboard data
- Push notifications to encourage activity
- “Help! My Pet Just..” situation-based help articles

1.2.2 Out of Scope

The following areas are mentioned within this document and prototype. However, they have not been explored fully in this design and are therefore excluded from these specifications.

- Logic system for the recommendation engine, used to determine recommendations and their frequency. While a detailed algorithm is out of scope, the factors that affect recommendation are described in section 3.5 of this document.
- Contents of information databases, which include: breeds of cats and dogs; activities and effectiveness ratings for each breed, weight classification, etc.; content for situational issues that arise for pet ownership.
- Input and viewing of health data.
- Manually entering activities that were done outside of the app.
- The exact behavior of co-owner coordination via the app.
- The contents and adjustment of app settings.

2 Project Background

Prior to designing this app, we conducted user research to identify problems that people face in caring for their pets. After analyzing our user research, we developed three personas to guide the design of our application. A summary of our research findings, as well as the feature requirements that resulted from our research and personas, are identified below.

2.1 Design Question

In researching and designing this application, we worked with the following data-driven design question in mind:

*“How can we **inform, motivate, and empower** users to engage in the activities that support **healthy and fulfilling** pet ownership?”*

We define and approach the keywords of our design question as follows:

Inform — The solution should provide new knowledge to the user so that they have more information about proper pet care.

Motivate — The solution should encourage users to interact more often with their pet.

Empower — The solution should enhance the abilities of the pet owner.

Healthy — The solution should promote interaction that is conducive to pets' fitness.

Fulfilling — The solution should encourage interaction that is enjoyable to both the pet and the pet owner.

2.2 Research Points and Findings

We conducted user research using three primary methods. We deployed a broad survey (n=443) to try to identify problems and goals across many aspects of pet ownership, as well as to make a first pass at identifying user types. We then deployed a diary study (n=6) to gain insight into pet ownership activities throughout the day, and conducted semi-structured interviews (n=11) to probe deeper in order to find specific goals and breakdowns.

Through our user research we found (1) that many first-time pet owners do not feel confident in their knowledge and abilities of pet care; (2) that both experienced and inexperienced pet owners recognize the importance of proper and regular training; and (3) that many pet owners, especially those with full-time employment or study, found it difficult to either fit engaging activities – especially exercise – into their busy schedules or to be motivated to interact sufficiently with their pets.

From this, we identified three personas whose needs our application will address. Our first, primary persona represents the common problems that young, first-time pet owners face, particularly lack of knowledge about pet care strategies and shortage of time. Our second persona is secondary and represents career-driven individuals whose busy schedules interfere with optimal pet care. Our third persona is supplementary and represents more knowledgeable and confident owners who may be interested in new information or tools, but aren't in desperate need for help.

2.3 Problem Statement

Our application attempts to address the lack of knowledge, time, and motivation that some pet owners have in regards to proper pet care. Specifically, we attempt to give pet owners knowledge and recommendations that help bring their pet care habits to a higher level, beyond just the basics, to help create a healthy and fulfilling life for both the pet and owner.

We also tackle the issues of lack of motivation by looking for ways to encourage pet owners to interact sufficiently with their pets and engage in appropriate levels of activity.

2.4 Design Requirements

Through our user research, we identified several design requirements that our final product aimed to address. Ultimately, we concluded that our users would be well-served by a product that educates them about productive pet care activities and encourages them to engage in these activities more regularly.

The specific design requirements that we kept in mind during the design of this application follow. The solution we designed was developed to:

- be simple and accessible for pet owners whenever they need;
- help ease the burden of being too busy to care/play for their pet by inspiring pet owners to interact, even if in small “bite size” ways;
- provide information and enhance the knowledge of pet owners;
- be able to remind the owner of about the events and activities necessary for quality pet care; and
- support coordination between co-owners and other caretakers of pets, when possible.

3 Design and Description

The following section begins by describing the general behavior and features of the application. Next, it describes the flow of the application and details the UI of each included screen. Finally, it concludes with a discussion to guide the development of back-end algorithms.

3.1 Application Overview

Wag-n-Purr is a mobile application that allows pet owners to go beyond the basics of pet care and tailor their interactions to help their pets live a long and healthy life. Wag-n-Purr aims to reach this goal by identifying ideal pet care based on breed, age, and current health of the pet.

At the heart of the application lies a recommendation engine, which recommends two activities chosen specifically for the user's own pet and based on the user's current environment. While many pet owners know some basic activities, this feature is designed to provide pet owners with novel ideas that might address their pets' needs better than their

current interactions. For example, activities might specifically address trained behaviors that aren't normally targeted by common activities. We simplify users' decision-making through this "This or That" activity choice. Additionally, our activity recommendations may inspire pet owners to interact, serving as a reminder. We hope that these recommendations will motivate pet owners to engage in a well-rounded set of activities with their pets in order to promote a healthier and more fulfilling lifestyle.

Each feature has been designed with the needs of our personas in mind. For example, our primary persona (a first time pet owner) lacks knowledge beyond the basic; for their needs, we designed our recommendation engine to suggest novel activities. For times of crisis when their lack of knowledge can lead to panic, we designed our "Help, My Pet Just..." feature, described in detail below. Our second persona lacks ample time or motivation to fully engage with their pet. To address their concerns, the application uses contextual information to intelligently recommended and notify the user of activities that they may be more willing to do. We also suspect that unmotivated users who would otherwise not interact will now be more inclined to engage if they are prompted to do so. While we did not design with our third person (who knows how to care for their pet but may entertain new ideas) in mind, we believe that they may find utility in our application because of the recommendation of novel activities and the ability to track their activity against goals.

The application's additional key features are explained in the next section.

3.2 Key Features

This section details key features that we believe enhance pet owners' abilities to care for their pet.

3.2.1 Context Aware

Wag-n-Purr utilizes contextual information such as weather, time, location, and calendar events to tailor recommendations and notifications to the particular user. This allows the application to smartly decide when and what activities should be suggested, improving the chances that the user will choose to engage with their pet. Additional details of the context aware algorithm are described in section "3.5.2 Contextual Awareness" of this document.

3.2.2 Motivation

By suggesting two activities, we aim to reduce the cognitive load of choice from hundreds of possible options. By showing expert-verified reasons behind each activity's recommendation, users are motivated to engage with their pet and improve their pet's health. Users may also

be more interested in engaging with their pet if the activity is something new and different from their normal habits.

3.2.3 Learning

The logic algorithm creates a dynamic environment that is tailored over time to suggest activities that are based on the pet's current health situation. The back-end of the application identifies gaps in a pet's care, causing it to recommend activities that help address the deficit. In addition, the app balances the needs of the pet with the activities that they enjoy, improving the chances that the owner and pet will enjoy the suggested activities. The factors driving this algorithm are described in more detail later in section "3.5.1 Activity Recommendations" of this document.

3.2.4 Dashboard

The Dashboard gives the user an at-a-glance overview of their pet's current health situation. To give the user insight into how well the health goals of their pets are being met, the Dashboard lets the user visually compare the time they've spent engaging with their pet against recommended activity goals determined by the needs of the pet. We hope that by comparing their pet's activity levels to a recommended goal, we inspire pet owners to engage more often to meet and exceed these goals. While the Dashboard currently includes only one visualization, we plan to identify more ways to visualize pet data to provide insight that owners can act upon.

3.2.5 Notifications

Some users lack the motivation to frequently engage with their pet on their own, especially after a long day at work. Additionally, users may perceive that they are too busy to engage with their pet. Wag-n-Purr uses the contextual awareness information accessed by the application to tailor optional notifications for each user. For example, the application may notice that the weather around the user is great and that the user has not engaged with their pet through the app, causing it to send a notification encouraging the user to begin an outdoor activity. We hope that notifications will help motivate and inform users about time they may have available to interact with their pet.

3.2.6 "Help! My Pet Just..." Situation-Based Help Articles

Because pet owners occasionally face crises that may require quick action (such as if their dog has eaten chocolate), we have included a situation-based help article system to help

pet owners find information as quickly as possible when saving even a few seconds could be crucial. With this system, pet owners see a list of common or grave problems, as well as an option to search by keyword. We believe that this system will serve users who have never faced problems with their pets and may feel desperately unsure of what to do when their pet may be at risk.

3.3 Application Navigation and Flow

There are currently three main flows that exist within the application: (1) Adding a pet, (2) choosing and doing an activity (manually and via notification), and (3) viewing situation-based help articles. Additionally, (4) a special first launch setup flow is launched when the user does not yet have a pet added. Figure 3.3 shows an overview flow of the entire application. The sections below go into more detail about each individual flow.

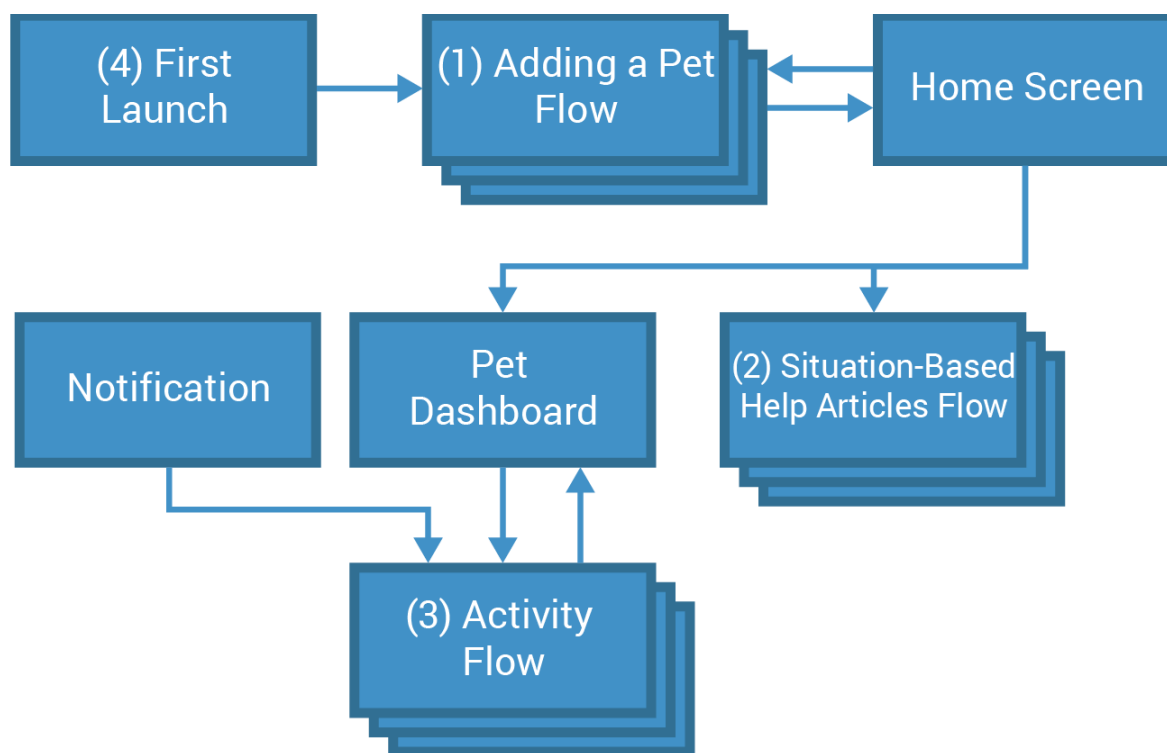


Figure 3.3 — Overall Application Flow

3.3.1 Adding a Pet Flow

In order to use the recommendation engine aspect of the application, users need to add at least one pet to the system. The Adding a Pet flow is initiated from the Home Screen. In the case where the user does not have any pets added (i.e. when they first launch the app or if they remove all of their pets), the Adding a Pet flow is initiated from a Getting Started screen; this behavior is discussed below in the First Launch Flow section.

Upon entering the Adding a Pet flow, the user enters identifying and type information about their pet, which includes an optional opening of the OS's Camera Roll.

When the user has entered all of their pet's info, the user exits the Adding a Pet flow and returns to the home screen.

The Adding a Pet flow is illustrated in Figure 3.3.1.

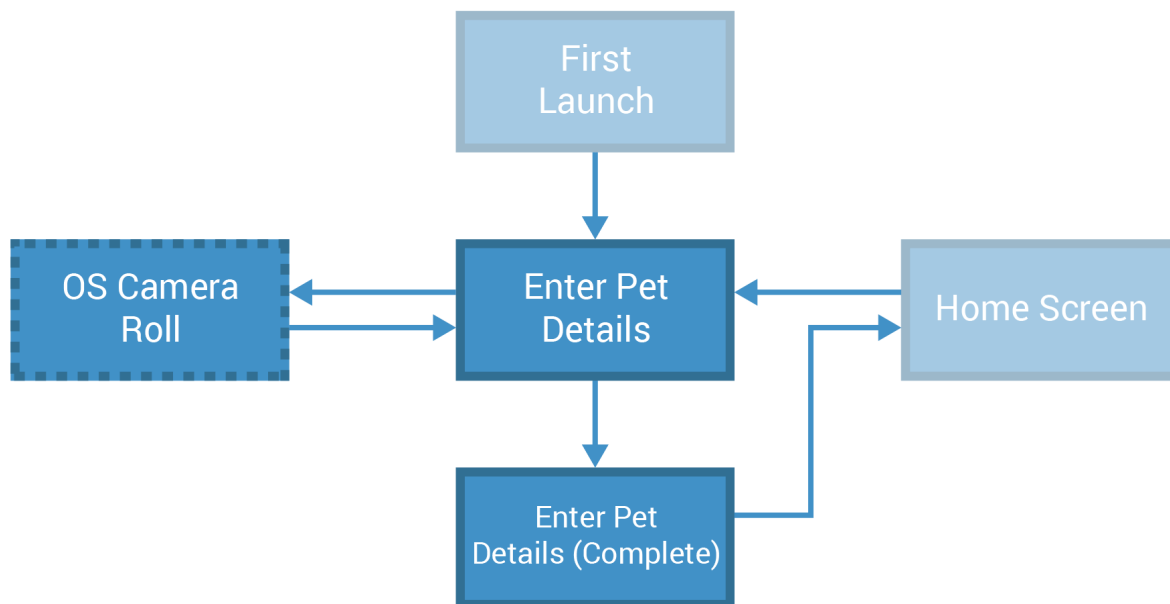


Figure 3.3.1 — Adding a Pet Flow

3.3.2 Activity Flow

The Activity flow begins with a recommendation of two activities. Once the user selects an activity, they see details about how to perform the activity, the benefits that it will provide, and other information about why the activity was recommended. The user can choose to begin the activity, which launches an activity timer. Upon completion of the activity, the user

goes to a debrief screen which provides more information about the benefits of the activity they just completed, as well as an opportunity to input data about their pet's enjoyment of the activity. Finally, the user is taken back to the Pet Dashboard.

The Activity flow is illustrated in Figure 3.3.2.

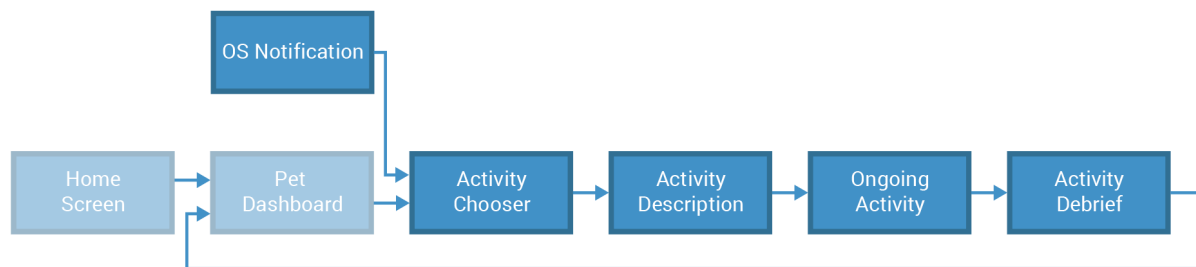


Figure 3.3.2 – Activity Flow

Manually

Users may launch the Activity flow manually via the Pet Dashboard, which includes a button to an activity.

Via Notification

The user may also be brought into the Activity flow via a phone notification, which is designed to push the user to more frequent engagement.

3.3.3 Situation-Based Help Articles Flow

From the Home Screen, the user can initiate the Situation-Based Help flow, which begins as a list of common problems and a search field. The user can navigate from the article list to a single article. From there, they can back out to return to the Home Screen.

The Situation-Based Help flow is illustrated in Figure 3.3.3.

3.3.4 First Launch Flow

The First Launch flow is a minor variation that occurs when the user does not have any pets input in the application. The First Launch flow simply replaces the Home Screen with a screen that addresses the needs of a first-time user in order to better guide them to the Adding a Pet flow.

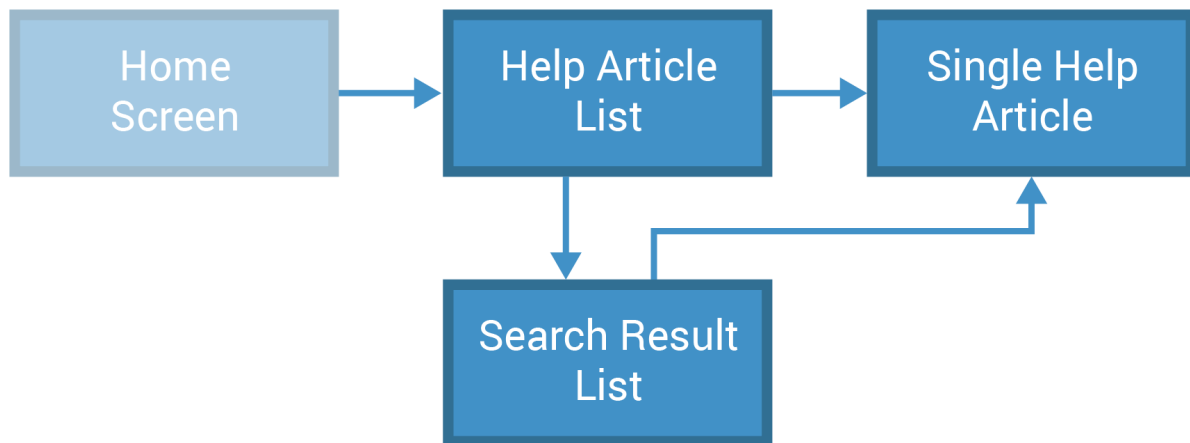


Figure 3.3.3 — Situation-Based Help Articles Flow

3.4 Screen Descriptions and Specifications

The following pages describe details about each in-scope application screen, including UI component contents, behaviors, and rationalization.

3.4.1 All Screens

All screens throughout the application share the same basic structure, based on standard iOS 7 screens. The application follows these conventions so that users familiar with the iOS 7 interface will intuitively understand how to navigate the app.

1 Application Header

Every screen uses the same app header, which features the Wag-n-Purr logo and a darker background.

2 Back Button

All pages besides the home screen have a back button, which brings the user to the previous screen. The back button always navigates to a different screen; it is not used to “undo” changes that take place on a single screen.



3.4.2 Home Screen

The Home Screen loads each time the user launches the application. It provides the user with access to the pet(s) they have added, as well as the ability to add additional pets. The user can also access the “Help! My Pet Just...” feature and can change app settings. The Home Screen is the highest level; the user cannot navigate up from this screen.

1 Pet Name/Image

Both image and text are active touch targets. When tapped, the user is directed to the Pet Dashboard for that pet.

2 Add a Pet

Both image and text are active touch targets.

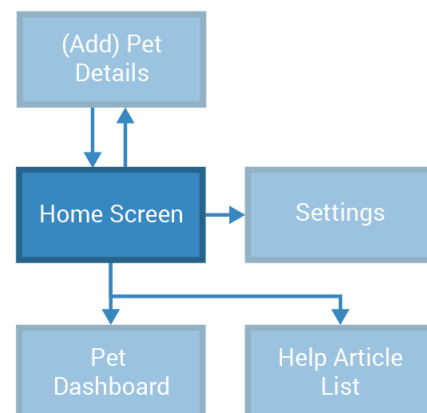
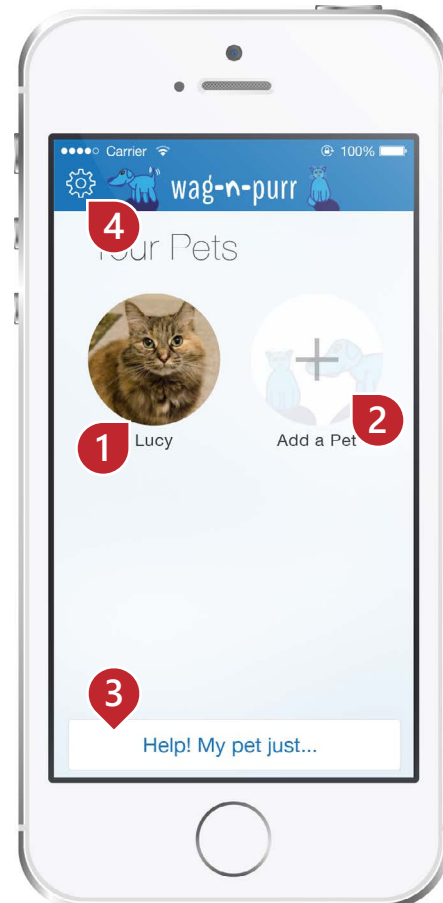
When tapped, the user enters the Add a Pet flow by being directed to the Pet Details screen.

3 Help! My Pet Just..

When tapped, the user is directed to the “Help! My Pet Just...” Article List, beginning the Viewing Situation-Based Help Articles flow. This feature is placed on the Home Screen since its nature requires quick and easy access.

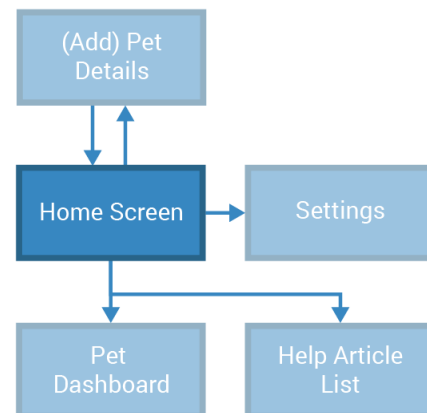
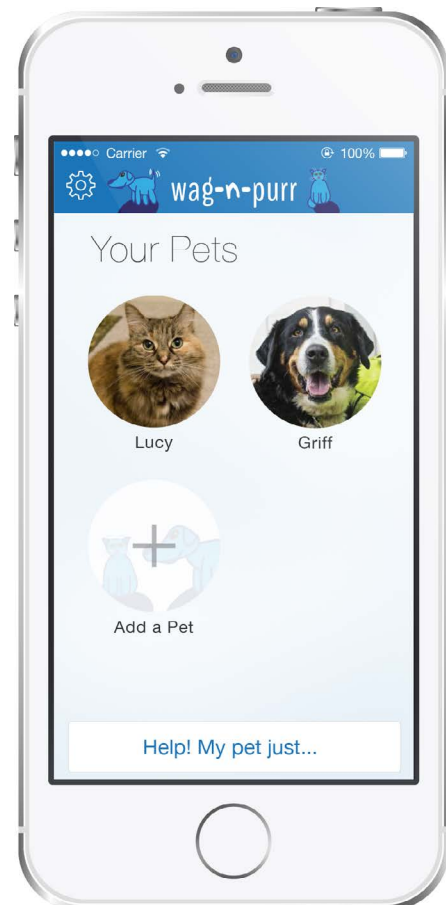
4 Settings Icon

Bring up Settings screen, which is out of scope for this document.



3.4.3 Home Screen (Case: Multiple Pets)

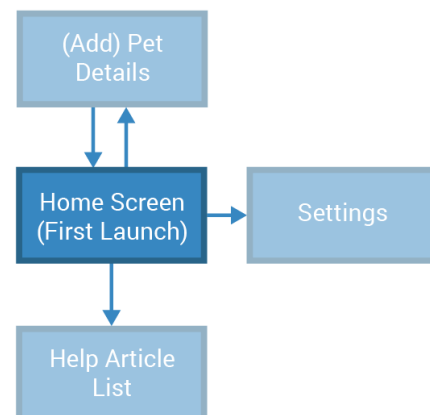
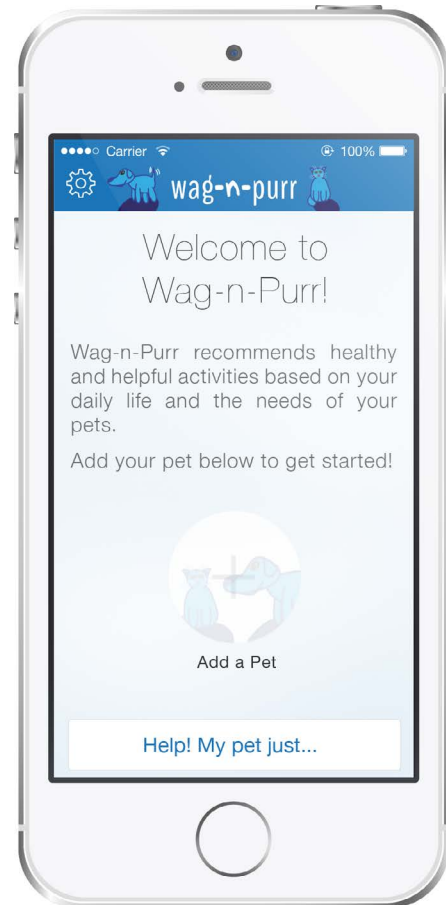
When the user has added multiple pets, they continue to appear, with two pets per row. When the amount of pets exceeds that which can fit on the page, the screen scrolls vertically to accommodate all of their pets. The “Help! My pet just...” button remains fixed at the bottom of the screen. By default, pets are sorted by the order they were added.



3.4.4 Home Screen (Case: First Launch or No Pets)

This is the first screen that new users see upon launching the application. Users may also encounter this screen if they manually remove all pets that they have previously added. Rather than show an empty screen, the Home Screen of the application changes to contain introductory text about how to get started and guidance to add a new pet.

The same UI components that exist on the standard Home Screen are include on the First Launch / No Pets case.



3.4.5 Pet Details

The user is prompted to add information about their pet. This information is essential to creating a tailored experience for the animal. Information such as type, breed, age, and weight are required because the app will otherwise not be able to properly recommend activities due to the nature of the learning algorithm. We attempt to reduce the effort needed by the user, by providing selection input components rather than free-form text entry.

1 Add Photo

The photo button sends the user out to the iOS camera roll (Default OS behavior). Adding a photo is optional.

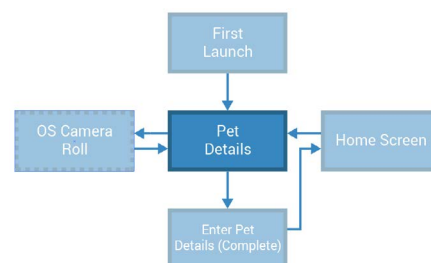
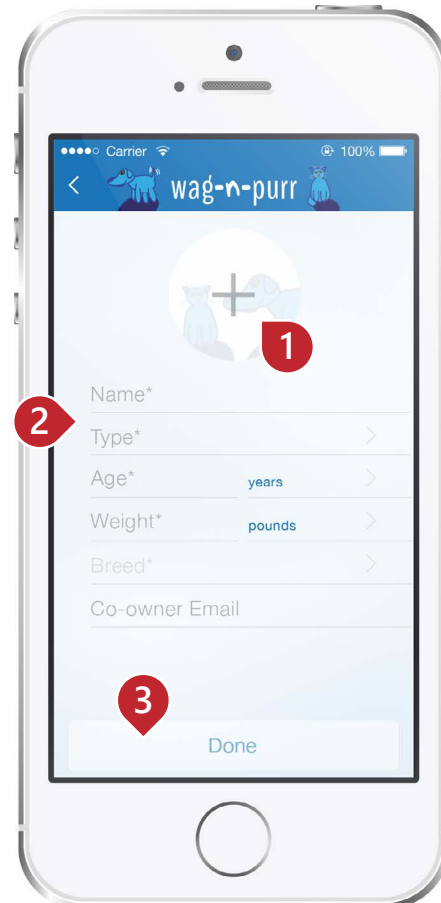
2 Pet Information

- **Name** — Text entry via OS keyboard
- **Age** — Number entry + selector (Years / Months)
- **Weight** — Number entry + selector (Pounds / Ounces)
- **Type** — Selector (Cat / Dog)
- **Breed** — Selector, contents determined based on chosen Type. Disabled until a Type is selected.
- **Co-Owner Email** — Text entry via OS keyboard

3 Done Button

This button is disabled (50% opacity) until required field (marked with an asterisk) are completed.

When tapped, the information is submitted to a database, and the user is returned to the Home Screen, showing their added pet.



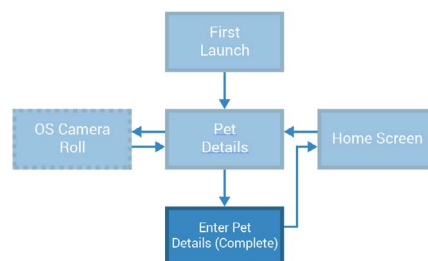
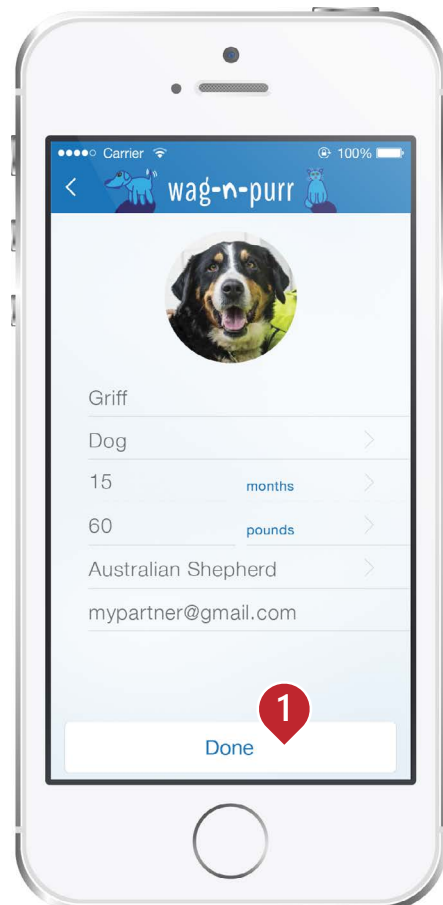
3.4.6 Pet Details (Case: Form Completed)

Example screen showing view after data has been entered by the user.

1

Done Button

The Done Button is enabled since the required fields have been completed.



3.4.7 Pet Dashboard

The dashboard is the landing page for a particular pet. The visualization of data helps the owner get a quick at a glance view of their pet's activity levels and health vs goals. Goals are pre-determined by the application by the information the user enters when they add a pet and the pet's ongoing level of activity.

From the Pet Dashboard, the user is able to start new activities or enter information manually.

1 Graph

The graph shows activity bars for each day in the past week.

Without data in the past week, the graph will be empty with the following message: "No activity to show yet."

2 Other Visualizations

User can swipe left or right on the entire graph area to access additional graphs. The additional graphs, which would be based on activity and health data, are out of scope for this document.

3 New Activity

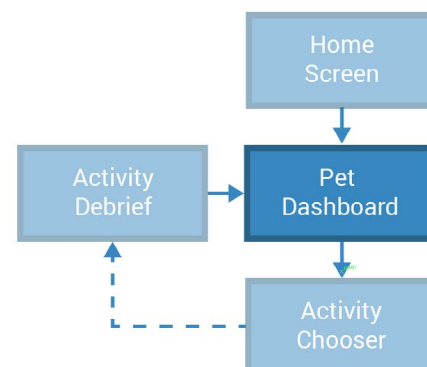
When tapped, the user is directed to the Activity Chooser screen for the current pet.

4 Enter Past Activity

Out of scope for this document.

5 Enter Health Data

Out of scope for this document.



3.4.8 Pet Dashboard (Case: With Data)

The data visualization was designed to help pet owners see how well they are doing against pre-defined goals.

1

Goal

The graph will have goal setting determined by type, breed, age, and health of the animal.

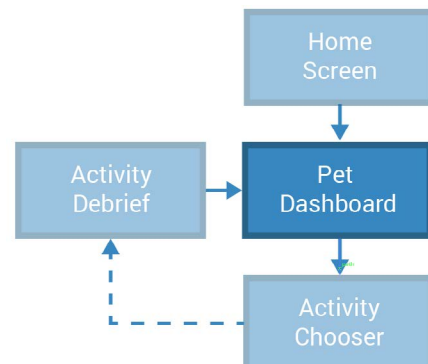
2

Populated Graph

When data is present, the visualization shows bars that correspond to time spent on activities for each day of the past week.

There are two additional key features to the bars. These allow the user to get a detailed view of their activity and healthy patterns for their pet.

- Color indicators show the days on which the user has or has not reached the goal. If goal is met the bar for the day will be green, if goal is not met for past day the bar will be red. The most recent activity appears in blue.
- Segmented bars on the graph that show the duration of each activity.



3.4.9 Activity Chooser

We give the user two choices for activities in an attempt to reduce the effort required when selecting an enriching activity. It also helps motivate the user to interact with their pet since both options involve interaction; the user's choice becomes between two activities rather than between doing any activity or not. The information supplied on this screen allows the user to quickly determine the targeted benefits of each activity so that they can understand why it is being recommended. This information may provide the motivation necessary for the pet owner to interact more often.

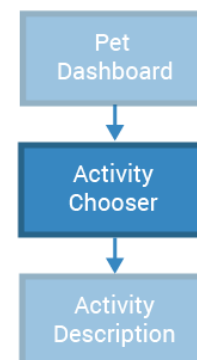
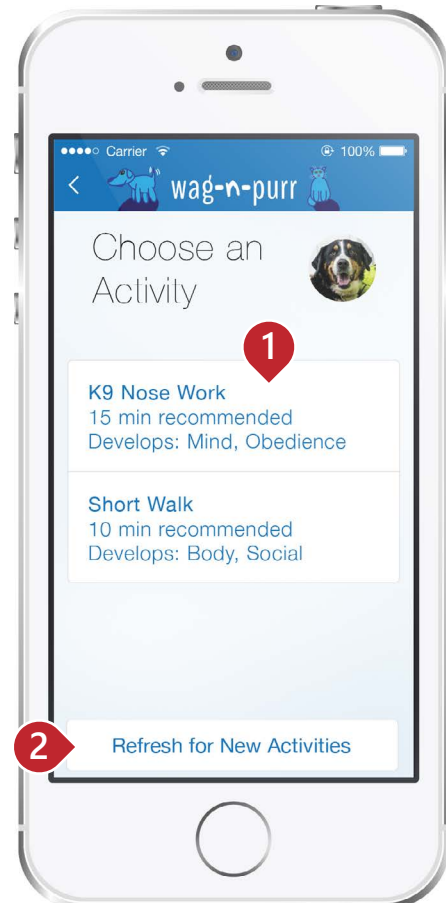
1 Activity Buttons

Shows two different recommendations for activities with the following information:

- Line 1: Title of activity.
- Line 2: Recommended length of activity.
- Line3 : List of qualities that the particular activity aims to develop.

2 Refresh for New Activities

Reloads the page with new recommended activities for both buttons.



3.4.10 Activity Description

Clear information about both how to complete the activity and why it is recommended allow the user learn more and be more motivated, hopefully leading to fulfilling interaction. This screen may also show contextually aware information to strengthen the rationale for recommendation.

1 Activity Title

Displays the title of the selected activity.

2 Step by Step

The screen may contain instructions about how to complete the activity if it's not simple or obvious, such as these step by step instructions.

3 Activity Description

The activity description provides insight into why the activity was recommended. If the text is too long, it scrolls behind the Start Activity button, which is fixed in place.

4 Start Activity

Tapping this button directs the user to the Ongoing Activity screen and begins the activity.



3.4.11 Activity Description (Variation)

This screen shows an example of a variation, where the recommendation is based upon the weather (contextual awareness) and history of enjoying the activity (learning algorithm).



3.4.12 Ongoing Activity

While the activity is ongoing, a timer is displayed so that the duration of the activity is visible and recorded. In-the-moment directions allow the user to continue to successfully run the activity, without having to leave the current screen if the activity is unfamiliar to them.

1 Activity Title

Shows the title of the selected activity.

2 Timer

Digital clock that counts up from zero until user either pauses or stops.

3 Description

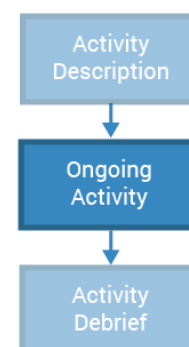
Text to give users relevant reminders or information about how to do the activity properly.

4 Pause Timer

Active button that pauses the timer. When tapped text will switch to “Resume Timer.” When “Resume Timer” is tapped timer counts up from prior stopping point, and the button’s text label switches back to “Pause Timer.”

5 Stop Activity

Active button that stops the timer and brings up the Activity Debrief screen. The application must remember the stopped amount on the timer and bring that value to the debrief screen, as well as log the duration on the Pet Dashboard.



3.4.13 Activity Debrief

After the activity, the app provides positive feedback to try to help the user recognize the value of the activity they completed. Along with a reiterative explanation of the activity, this further reinforces the owner's learning about pet care. A simple enjoyment rating for each activity allows the application to learn what the pet enjoys. This allows the application to balance what is best for the pet with what they prefer.

1 Activity Title

Shows the title of the completed activity.

2 Encouraging Text

Text area that reads "Congratulations! You [activity completion string] for..."

The activity completion string depends upon the activity. A sample is shown.

3 Time

The duration of the activity (from the previous screen) is displayed.

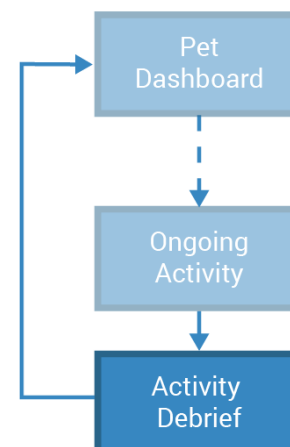
4 Explanation Text

Two line description from database explaining why the particular activity is beneficial. Actual text is out of scope for this document.

5 Learn More

Active link that reveals more information about the activity's benefits, from database explaining why the particular activity is beneficial. The display and contents of this are out of scope.

(continued on next page)



6 Rating System

The enjoyment rating system is detailed on the next screen.

7 Why?

When tapped, a short explanation of how the rating system affects recommendations is shown. The display and contents of this are out of scope.

8 Done

When tapped, this returns the user back to the current pet's Pet Dashboard.

Activity time and rating are remembered, with the Pet Dashboard's graph being updated with appropriate information.

3.4.14 Activity Debrief (Case: Enjoyment Input)

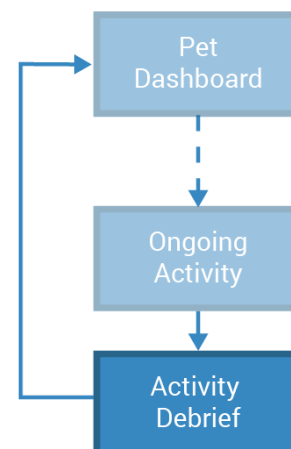
When the user enters an enjoyment rating, they remain on the same screen.

1 Rating System

Three faces represent the pet's enjoyment: a Frowny Face, a Straight Lined Face, and a Smiley Face. Each face is an active button that when tapped reveals the following text:

- Frowny Face: "Okay, we'll remember this and won't recommend this in the future."
- Straight Lined Face "Okay, we may try this activity again, but not as frequently."
- Smiley Face: "Great! We'll remember this and continue to recommend this in the future!"

These faces behave as radio buttons (exclusive selection) and become colored when active.



3.4.15 “Help! My Pet Just...” Article List

Situation-based information allows the user to quickly find support based on current issues they may be facing. In times of crisis, such as an accident with their pet, owners may panic. This features aims to help lower stress levels and help the user find the information they need more quickly.

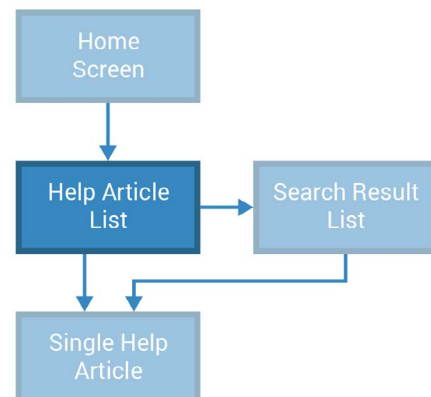
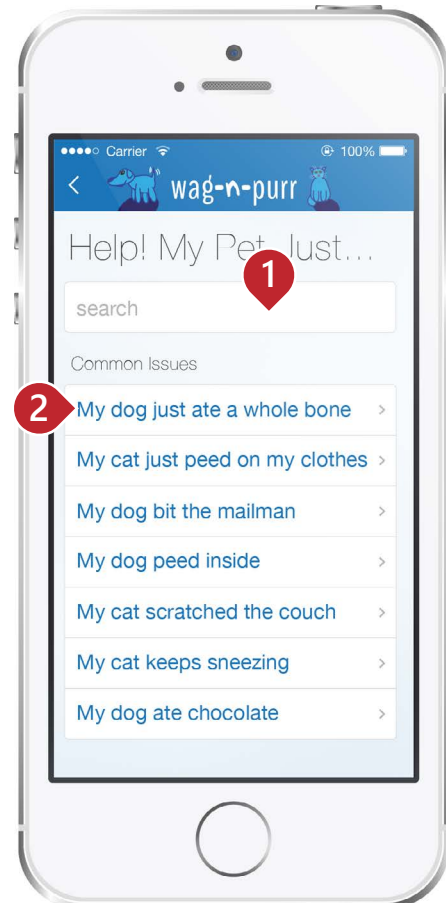
1 Search Field

Text input box that brings up OS keyboard to search article database. The display of these results is out of scope for this document.

2 Common Issues

This area lists common issues for the types of pets that have been added by the user to the application. This data is pulled from the informational database, the contents of which are out of scope for this document.

Each row is an active button that brings the user to the Single Article screen for that article.



3.4.16 “Help! My Pet Just...” Single Article

This screen contains detailed information or guidance curated by experts. The screen also helps the user find local professional help.

1 Article Title

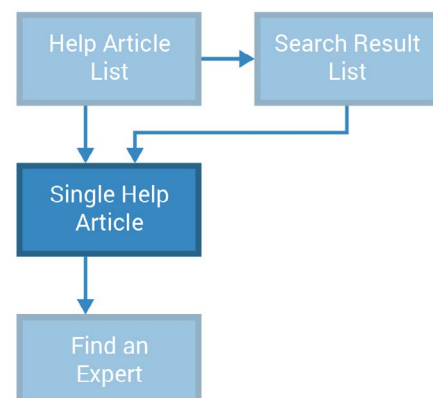
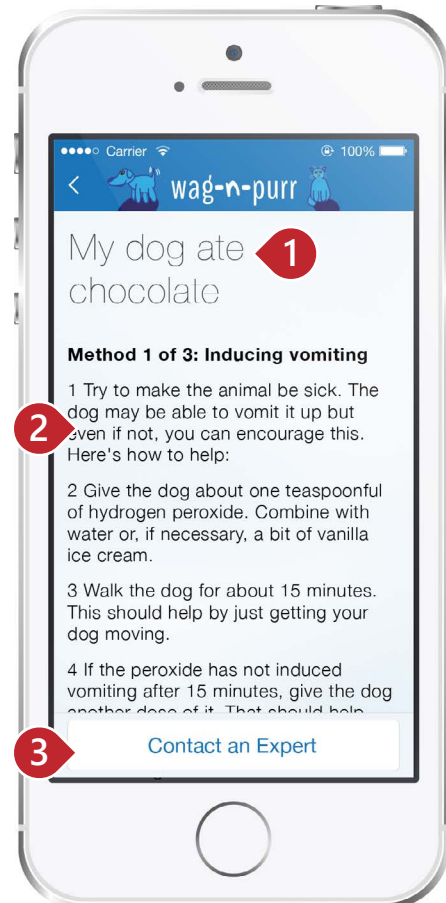
The title of the article is displayed.

2 Article Contents

The text contents of the issue are pulled from a database of pet situations. While a sample article is displayed here, the actual contents are out of scope. If the text is too long, it scrolls behind the Contact an Expert button, which is fixed in place.

3 Contact an Expert

Launches a feature to locate local experts who may be required to help, which is out of scope for this document.



3.4.17 OS Notification

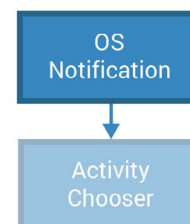
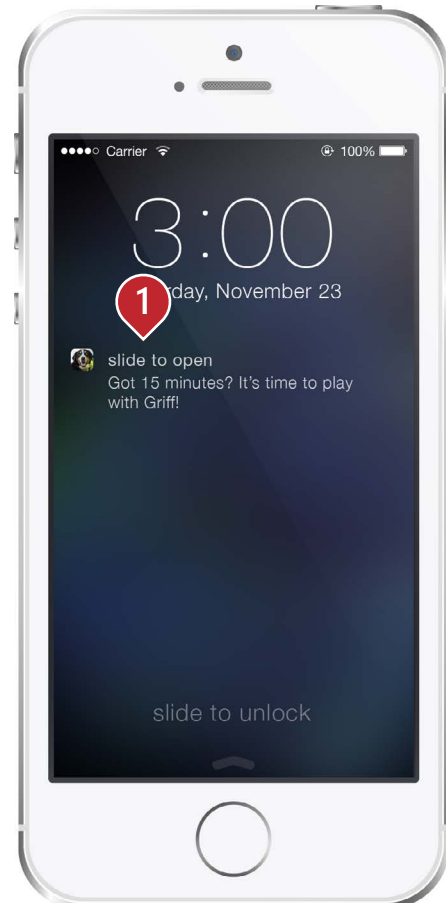
Lock-screen notifications can help motivate the user to engage with their pet when they might have free time, based on the contextually aware information (e.g. if the user is at home and not in an appointment).

1

Notification Text

A customized notification contains a recommended activity duration and the name and photo of the pet requiring attention.

The notification uses the default iOS action that allows the app to launch immediately when the user swipes the notification.



3.5 Back-end Recommendation Algorithm

Overview

The exact back-end algorithm that determines the frequency and content of activity recommendations is not yet developed and will require adjustments and fine-tuning. However, an overview of the behaviors is described below.

3.5.1 Activity Recommendations

Activities recommendations are determined by a (currently unspecified) weighting of the following factors:

- **The needs of the specific type and breed of pet** — A community of veterinarians and expert pet owners will need to be consulted to determine the varying needs of different types of pets. These needs refer to both the type of activity (such as whether it fulfills the physical exercise, mental development, socialization needs, etc.) and the frequency of each type.
- **The needs of the specific individual pet** — These needs are based on the pet's age and physical fitness (so far, determined by weight). For example, younger and heavier pets will cause the system to recommend activities that are more physical in nature, while an older pet may receive activities more aimed at mental stimulation, since they may be less able to participate in physical activities.
- **The past likes and dislikes of the pet** — After each activity, pet owners can mark whether they perceived that the pet enjoyed it, was ambivalent or apathetic toward it, or disliked it. The application should remember this data and use it to tailor the activity recommendations by recommending them more often, just as often, or less often than usual, respectively.
- **The contextual conditions of the user's environment** — Activity recommendations are also affected by information related to the user's location and local conditions. Contextual points are defined below.

3.5.2 Contextual Awareness

Some contextual information can affect promote or demote activities' likelihood of being recommended. These contextual points include:

- **The user's location** — Based on the GPS location data from the phone, the application knows where the user is. By intelligently recognizing the user's home location, the application will avoid recommending activities when the user is away from home. Because of this, the user won't receive annoying inactionable activity recommendations when they are away

from home.

- **The weather conditions at the user's location** — As weather can be a large factor in the activities that pet owners are willing to engage in, the application will take the user's weather conditions into account (based on their location). Bad weather, such as heavy rain, would prevent the recommendation of outdoor activities, for example. This feature is designed to make the application behave more intelligently, not recommending activities that the user wouldn't want to do. Outside of precipitation, temperature extremes that may be inappropriate for the particular type of pet would also prevent the recommendation of outdoor activities. For example, a dog with a heavy coat may be unable to cope with hot temperatures, in which case the application would recommend safer, indoor activities. The rationale for this behavior is that inexperienced pet owners may otherwise unknowingly expose their pets to dangerous temperatures.
- **The time at the user's location** — The application should only recommend activities during waking hours so that the user isn't alerted to do an activity in the middle of the night. Likewise, the application should not recommend outdoor activities when it is dark at the user's location (opting out of this feature would occur in the app's Settings).
- **The user's schedule** — If the user opts to synchronize their calendar with the application, the application would avoid recommending activities during calendar appointments, as the user would be unable to complete an activity while busy.

4 Future Work

Though the main front-end features of the app are detailed above, there is additional work that would enhance its functionality. In particular, additional visualization and health logging features would need to be added to extend the utility of the application to continue to meet our users' needs.

On the back-end the algorithms described above need to be fully developed and likely undergo testing and re-calibration to achieve the ideal balances of activity recommendations.

Beyond additional UI and app functionality developments, content databases for the activities and help articles would need to be populated after consulting with pet care professionals and veterinarians.

Throughout the above process, we would ideally go through additional user studies and field trials to identify the extent to which our users' needs are being met or can be further addressed.

