Ruff Watch

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Abstract

In the world of wearable technology almost all parts of the human experience can be monitored. Wearables can monitor everything from heartrate to calorie intake, but what about dogs [1]. The technology used in wearables worn by humans, can be implemented in animal wearables to offer similar benefits to pets as they do to pet owners.

Ruff Watch is an animal wearable used by dog owners on their dogs to track the animal's emotional and physical health. A dog's emotional well-being is strongly attached to their owner's emotional state. When their owner is sad the dog will feel the physical effects of sadness. Due to this, the dog's health is dependent on the owner's awareness of the animal's emotional state. The basis for Ruff Watch's design is pet owners knowing which actions affect their dog by being able to track the animal's emotional and physical state.

This proposal details the ways in which a team of developers could providing tracking data to pet owners by creating a wearable to improve the health and well-being of pets. The development team would base the design and development of Ruff Watch on related research, user research, design workshops and personal experience.

Introduction

Dog owners are concerned with their dog's fitness, stress levels, meals, play time, and sleep. Attributes of health are all things that traditional Apple Watches and Fitbits monitor in human user [1]. Pet owners should be able to choose to be alerted when their dog's needs need to be tended to for the animal to maintain good health.

While there are some animal wearable on the market, they mostly focus on the GPS tracking of pets [2]. An animal wearable could help pet owners reduce trips to the vet by tracking factors such as exercise. Tracking would not only allow for owners to be alerted that their pet's behavior has changed, but allow for prevent care by veterinarians.

This proposal details how an animal wearable could improve the life of animals and their owners, the best approach to develop a user centered animal wearable, the team needed to develop this wearable, and the time frame that this project could be completed in.

Related Research

Dogs lack the ability to communicate other than waging their tail or straight out staring at their owner. This can cause stress both on the dog and on the owner due to the guessing games that surround trying to take care of the dog's needs. A dog may vomit without any warning and feel anxious without any indication. Without 24/7 observation it is impossible to know if a dog is exerting and consuming the correct number of calories to maintain a healthy weight [3]. Problems in animal's health are caused by owners the lack of ability to fully monitor their pet.

There are a handful of animal wearables on the market, but none of them are the solution for all animals. Pet owners who monitor and care for their pet should be able to exchange monthly GPS tracking fees for well-developed emotional and physical tracking [4]. Doctors have provided evidence that an owners emotional state can greatly affect their pets emotional state [5]. Ruff Watch focuses on the emotional levels of the pet to allow for the knowledge of how the owner's emotions directly affect their pet. Many animal wearables currently on the market have a large focus on GPS tracking with little to no focus on emotional tracking [2].

Weight is often a pain point when it comes to a healthy pet. Animal wearables currently on the market do track physical activity but lack the connection to meal time [6]. Ruff Watch remedies a lack of connectivity by offering a feature to track a pet's activity levels and food consumption in tandem.

Approach

The Ruff Watch development team will take the following approach for developing and designing a wearable for animals. User feedback is valuable and therefore only touched on in this proposal, leaving room for additional user feedback when determined by the developers.

Step 1: User Research

The design of Ruff Watch will begin with user research. The target user group that will be used for Ruff Watch user research is pet owners with dogs. Researchers will conduct semi structured interviews as well as spend time observing dogs and their owners. Observation via camera will be used to evaluate behaviors of dog both with and without their owner present. Behaviors observed will allow developers to understand the dog's activity levels and emotional state without disrupting the dog's environment.

Another key aspect of Ruff Watch is its ability to track the emotional state of dogs. A veterinarian will be on the development team to provide input for the implementation of the emotional tracking feature. Veterinarians will also be interviewed with the user group to get a strong understanding of the most prevalent emotions taken into account when considering an animal's overall health.

Step 2: Designing and Prototyping

Once the bulk of user research has wrapped up users will begin working on designing and prototyping Ruff Watch. Designing and prototyping will overlap with user research and will start once the development team understands the problem at hand.

The designing and prototyping will mainly consist on the development team determining which emotions to track, how to track calorie intake and exertion, and the physical design of Ruff Watch. Vet input will be used to develop how to monitor the animal's emotions. User input will be used to develop what sort of devices the data collected by the useable will connect to.

Step 3: User Feedback and Design Workshops

After a general prototype is developed, users will be called in to participate in design workshops. During these workshops they will be asked to bring their dogs in and interact with the wearable on a connected device. The development team will monitor the dog's comfort level while wearing the wearable and use visual cues to determine if the emotions tracked by the wearable match up to the dog's true emotional state.

User feedback will be crucial to the development of Ruff Watch. Pet owners know what a day to day life is like and have undoubtedly had "blue sky" ideas when it comes to what they would like to see in a pet product. Users are unaware of the limitations involved in designing the product and therefore are able to come up with creative ideas that might have not come up during initial user research.

Step 4: Design and Finalization

The development process is iterative and even though one step may be completed it is likely that developers will need to go back and forth between steps. Even after the product has been

released developers strive to continue releasing updates for the product and or more generations of the product itself.

Once the bulk of the user feedback is complete, the development team of Ruff Watch will finalize the design for the animal wearable to be released onto the market. If given the opportunity, the team will continue to work on updating the product based off of customer reviews and feedback.

Developers' Roles

The development team of Ruff Watch would be comprised of a user interface designer, veterinarian, software developer, and mechanical engineer.

Courtney Smith: User Interface Designer

A devoted dog lover with a service dog who became frustrated with the current animal wearables on the market. Courtney's background is in creating accessible design and prototyping devices to be used to get user feedback during every step of the design process. She also has extensive background in user interface design.

Dr. Jeffrey Sky: Veterinarian

Jeffrey has been a veterinarian for 30 years working with well-loved pets at the neighborhood animal clinic. His specialty is in preventative care to maintain good health of cats and dogs. Jeffrey has also been volunteering for Canine Companions for Independence, giving service dog routine check-ups to maintain their peak working health.

Robert Kouns: Software Developer

Robert is a cat owner and software developer with a degree in computer science from the University of Washington. He has worked on projects such as Apple's Apple Watch and the first generation of Fitbits giving him ample knowledge of wearable technology.

Blair Olmstead: Mechanical Engineer

Blair is a mechanical engineer with a talent for making devices lightweight and unobtrusive. She has recently gone back to school to get a master's in electrical engineering and has a thorough understanding of the physical and electrical attributes needed to create comfortable wearable technology.

Schedule

Omitted from the schedule show in Figure 1 are additional rounds of user feedback that will be conducted at the discretion of the development team. Along with the omission of additional user feedback, product design is not fully linear and each step of the development process will overlap and allow for iteration.
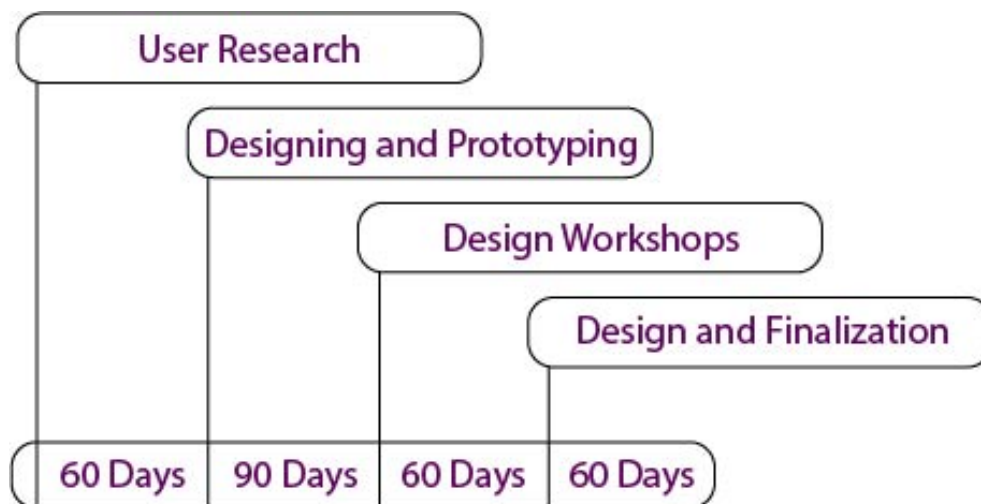

Figure 1: Ruff Watch Design Schedule

References

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