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Project Preliminary Proposal: Pet Monitoring Band

1 Introduction

Pet Monitoring Band is a project that aims to provide assistance to pet care through technology. This system is designed to monitor the biological data, physical activity, and location of pets in real-time. It leverages the power of GPS, gyroscopes, and biometric sensors to provide pet owners and veterinarians with valuable insights into a pet's health and behaviour. The band is connected to the cellular network to transmit data with the owner in real time. The owner can also choose to share their data to enrich the database.

2 Details

2.1 Service Provided

The system provides real-time monitoring of pets' biological data (like heart rate, body temperature), physical activity (like steps, sleep patterns), and location. It also offers on-device or online historical data summarization and analysis. It also gives suggestions based on the rich data of their pets people share.

2.2 Target Client User

- Pet Owner: Pet owner registers an account before using the band. After that, the owner pairs the band on the phone. Once the band is paired, the pet owner can view essential data of the pet on their phone, including biological data and physical data. If the band is worn for over a day, a daily report will be notified for the owner to have a look. If there's something wrong happened with the pet, the owner will receive an alarm on their phone.
- Veterinarians: Veterinarians inspect past data for better treatment for pets.

2.3 System Usage

- Data Collection: Users attaches the band to their pets. The band then collects data and sends it to a mobile app for data visualization.
- Data Analysis: The app analyses the data of the pet on a daily basis and generate a report of the day.
- Alerts: Several alerts' scenarios are designed, including abnormal biological phenomena, pet leaving constraint areas, and so on.
- Data Sharing: User can choose to share the data of their pets to enrich the pet health database.

2.4 Reasons of System usage

- Lack of regular health information: Pets don't talk, so it is difficult to know how it feels on a regular basis. It is quite common that when the pets are finally displaying something wrong, the disease is too severe that the vets are not able to save it. The pet monitoring band allows the owner to see the pet's health condition in real-time, sometimes alerting the owner about something irregular.

- Pets are sometimes lost: A pet monitoring band can also serve as a GPS tracker, allowing the owner to locate their pet in real-time. This feature can be particularly useful in urban areas where there are many places for a pet to hide or get trapped.

2.5 Technologies
- The band:
  - Biometric Sensors: For real-time health monitoring.
  - GPS: For location tracking.
  - Electronic Gyroscope: For physical-movement monitoring.
  - Cellular Network: For real-time communication.
  - Bluetooth: For phone-band pairing.
- Phone app/Data Center:
  - Cloud-Based Machine Learning for data analysis and personalized recommendations generation.