Lab 1 - Pest Patrol Product Description

Andrew Undercoffer

Old Dominion University

CS 410: Professional Workforce Development

Apr 10, 2022

Version 1

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1. Introduction

Pest encounters are a common occurrence in most communities. These encounters are often dealt with on an individual basis. However, a pest encounter is rarely an isolated incident. Many pests, such as ticks, mosquitoes, and rats, are often a problem for the whole community and not just for an individual. A problem that affects a community requires a community based solution.

Unfortunately, communities often lack the necessary tools needed to deal with pests holistically. Members of a community have no reliable way to stay informed on local pest encounters, they often don't share information on how to deal effectively with pests, and what information that does exist isn't consolidated. While there are tools available to an individual, these tools treat the problem as an isolated incident.

Pest Patrol is an application designed to protect communities from pests by allowing communities to consolidate and share information about pest encounters. The application will keep community members informed on all reported pest encounters in their community. Also, it will allow community members to track pest outbreaks with customizable heat mapping. Additionally, the application will aggregate already existing knowledge on specific pests. All of these functions will be implemented in real time, so that community members are always kept up to date.

2. Pest Patrol Product Description

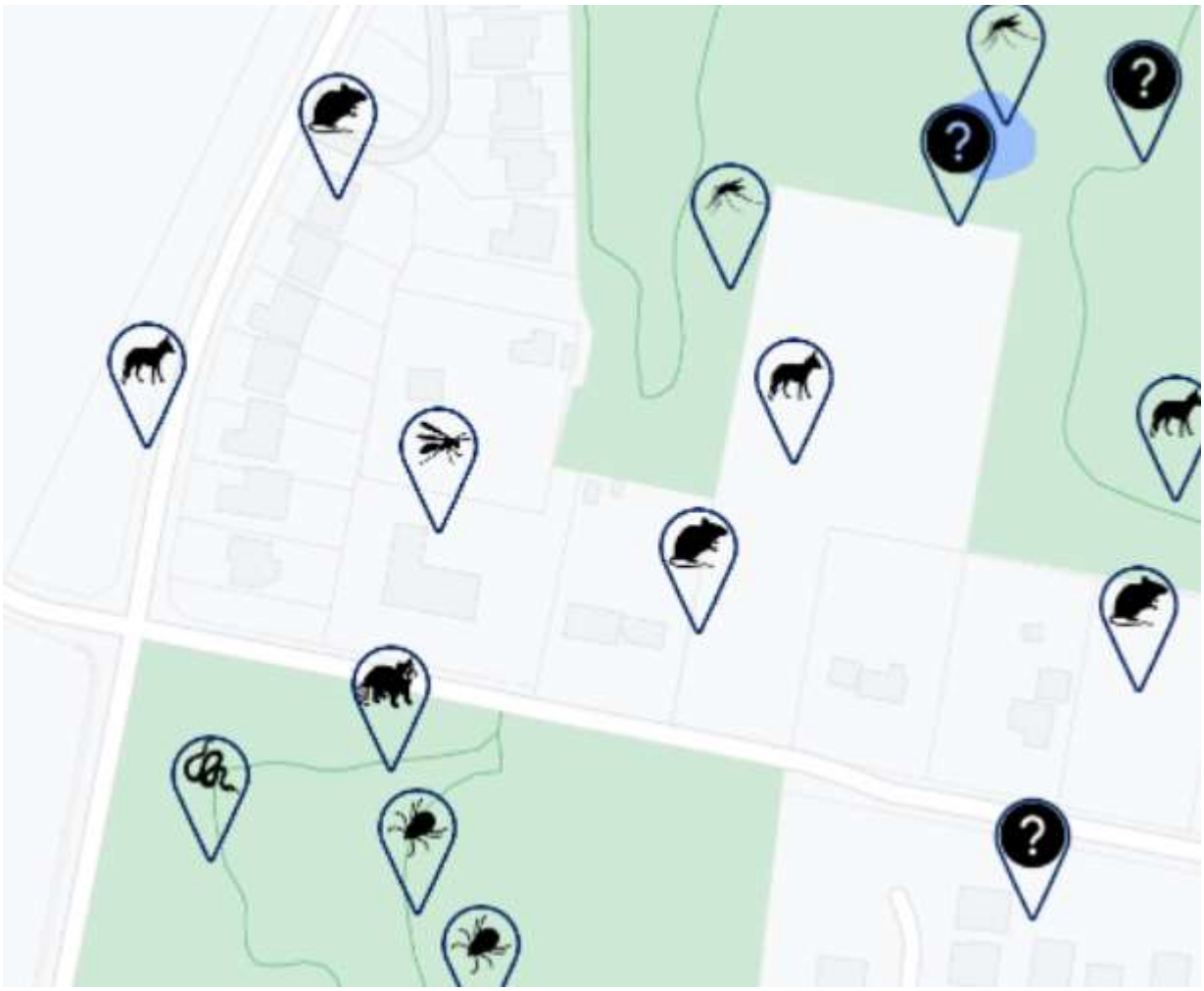
Pest Patrol will provide real-time location information on local pests, based on information submitted by local community members. This location information will be displayed as a heat map that shows the concentration of various pests. Additionally, users of the application can post pest related questions to the application, to which other users can respond. The overall goal of the application is to consolidate all local pest related information in one easy and convenient location.

2.1 Key Product Features and Capabilities

The application's main feature is the pest incident map.

Figure 1

Pest Patrol Incident Map



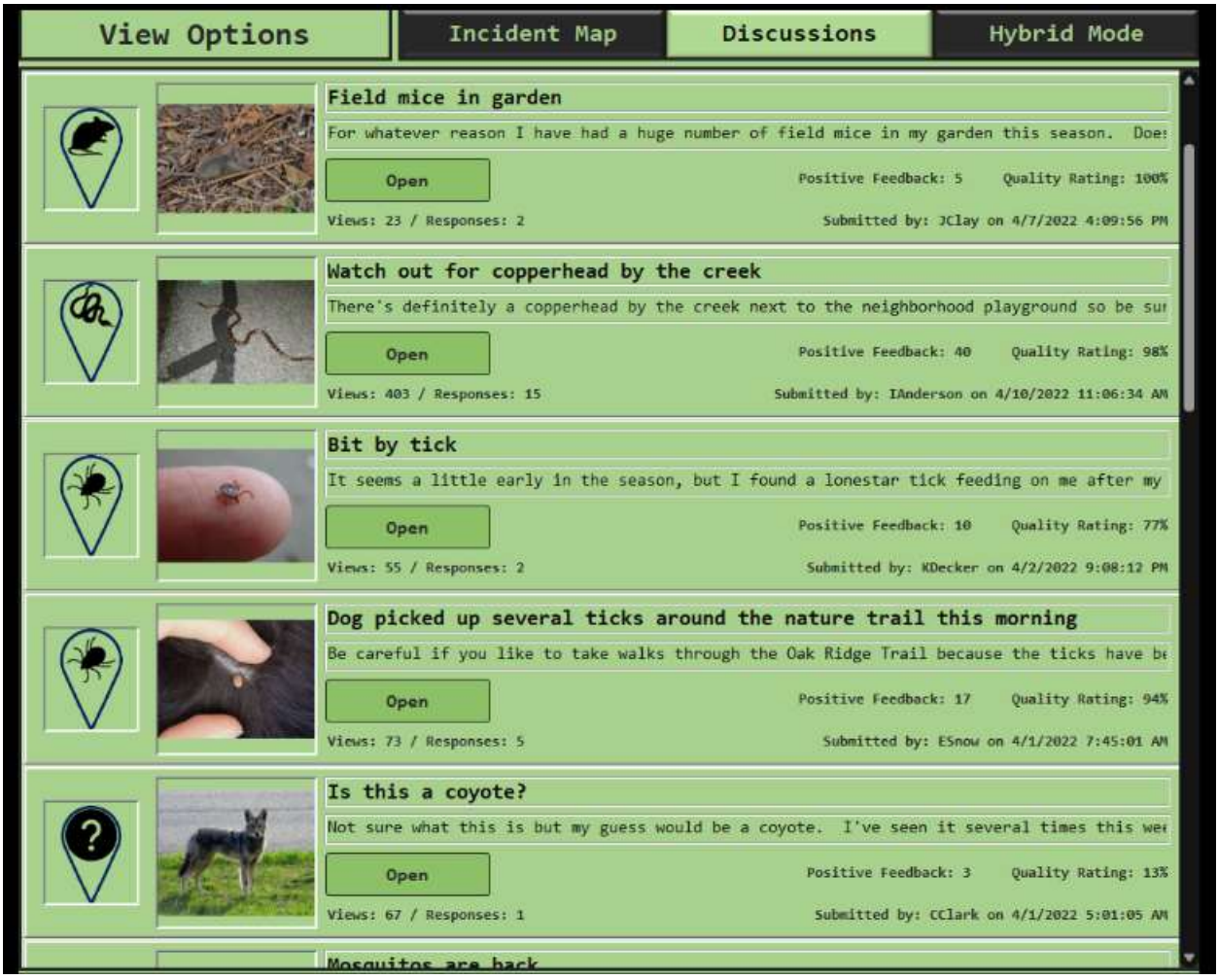
The incident map provides the user with an overview of pest encounters in their local community. Pest encounters are pinned to the map and display an icon indicating what type of pest was encountered. This map can be filtered by incident date, pest type, and the incident reporter. This incident map also has an alternative heat map view. This view is designed to showcase emerging pest trends for specific pests. Cooler colors on

the alternative view indicate a lower probable concentration of specific pests, while warmer cooler indicate a higher probable concentration of a specific pest. These predictions are based on user reports, local historical data, and known pest behavior.

The application will also have basic social media functionality such as messaging, posting, and commenting.

Figure 2

Pest Patrol Discussion Board View



These functions work much the same way as any social media site.

2.2 Major Components (Hardware/Software)

The application will be primarily web based. No specialty hardware is required to access the application beyond a camera and an internet enabled device.

The front end of the application is created through the Angular web framework. This Angular framework connects to the middleware Node.js. The database functions will be implemented through Google's Cloud Platform. ProtgreSQL will be used to access and manage the database. The application's primary code editor will be visual studio and its software management system will be github.

Figure 3

Pest Patrol Major Functional Component Diagram

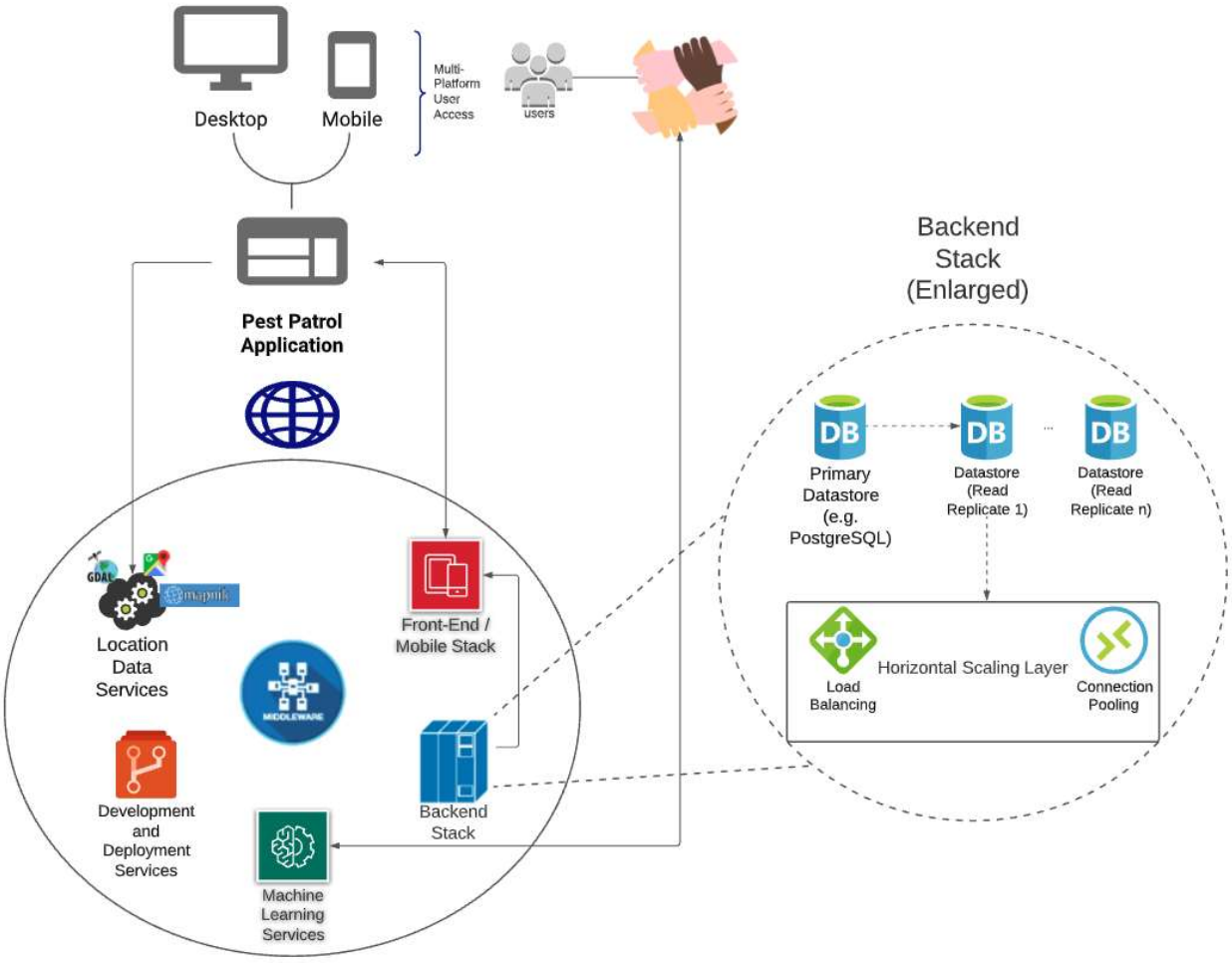


Figure 1 illustrates the major functional components of Pest Patrol. Users will access the application through either a desktop or mobile device. The Pest Patrol application itself will be hosted by Google Cloud Services. The application will interface with Google Maps api and the ProtgreSQL database.

3. Identification of Case Study

Pest Patrol is primarily intended for use by community members, hikers, campers, and local governments. These groups all have a vested interest in avoiding and/or eliminating pests. Community members wish to protect themselves and their property. Hikers and Campers also wish to protect themselves and their property, but they also spend a great deal more time outside and this time is often spent in unfamiliar locations. The application will allow these outdoors people to better avoid pests, which will greatly improve their outdoor experience. Local governments have a duty to protect their citizens and their property from pests as much as possible. The application will allow them to better monitor and control pests that negatively affect community welfare.

The case study group for this application will be a simulated suburban neighborhood consisting of several families. This simulated community will demonstrate how pest patrol can be used to safeguard communities from pests.

Pest control companies, homeowners associations, government agencies, and researchers will all benefit indirectly from the Pest Patrol application. The application will give exterminators a better understanding of how to target a neighborhood's pest problems and better pest management will allow homeowners associations to more effectively maintain neighborhood home prices and the data gathered by the application will prove invaluable to both government agencies and researchers.

4. Product Prototype Description

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4.1 Prototype Architecture (Hardware/Software)

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4.2 Prototype Features and Capabilities

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4.3 Prototype Development Challenges

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5. Glossary

Bot Moderation: The automatic screening of user content to ensure proper user behavior.

Community Member: A member of a community, see Community definition.

Community: The people with common interests living in a particular area broadly the area itself.

Geo-targeting: Method of determining the geolocation of an application user and delivering different content to that visitor based on their location.

Geo-tagging: The process of appending geographic coordinates based on the location of a mobile device.

Heat Map: A data visualization technique that shows magnitude of a phenomenon as color in two dimensions.

Incident: An occurrence or sighting of a pest reported by a user.

Pest: Any animal or plant harmful to humans or human concerns.

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