AI driven Animal Resuce and ML for injury detection to efficiently connect NGOs

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Project Guide

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Overview

- Problem Definition
- Proposed Solution
- Literature Review (Slide 3-5)
- Observations and conclusion of Existing Work
- System Architecture/ Block Diagram
- Project Timeline
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Problem Definition

- AI driven Animal Resuce and ML for injury detection to efficiently connect NGOs

Problem Definition

In India, thousands of injured animals suffer and die each year due to the lack of timely intervention and treatment. Many cases go unreported, leaving animals without critical care. Our project addresses this by developing a comprehensive platform that leverages AI and machine learning to enable quick reporting, assess injury severity, and connect animals with nearby NGOs for immediate assistance. We have partnered with over 15 well-established, government-certified NGOs across Mumbai that actively participate in animal rescue and treatment. By improving rescue response times, we aim to reduce unnecessary animal deaths and create a more humane society. As a future step, we plan to expand to more metropolitan areas, extending our impact and reach.

Proposed Solution

- The platform allows users to report injured animals by sharing their location and photos, which are then analyzed by our Gemini AI model to assess the severity of injuries. This information, along with optimized routing via Mappls Maps, is sent to the nearest NGO for swift rescue and treatment. By improving response times, we aim to save countless lives that might otherwise be lost due to delayed intervention.
- In addition to rescue operations, the platform will serve as a comprehensive hub for animal welfare, offering an adoption service to help animals find loving homes, and a pet training platform to support pet owners. For ongoing care, we'll implement an AI-powered 24/7 veterinary service, providing immediate medical advice, and for more complex cases, users can consult certified animal doctors through our online video call feature. This holistic solution will not only rescue animals but also ensure their long-term well-being.

Literature Review

- ***"You Only Look Once: Unified, Real-Time Object Detection"***

  Existing Systems: Traditional object detection methods, such as R-CNN, use multi-step pipelines—first generating region proposals, then classifying objects. This results in slow inference times, making real-time applications difficult. Although Faster R-CNN improved efficiency, it still suffers from complexity and speed limitations.

  Methodology/Approach: YOLO simplifies object detection by treating it as a single regression problem. It divides the image into a grid, with each grid cell predicting bounding boxes and class probabilities in one pass. This unified framework allows for much faster detection, making YOLO suitable for real-time applications.

  Key technologies used include:

1. Convolutional Neural Networks (CNNs) for predicting object boundaries and classes.
2. Unified Detection Framework that handles both region proposal and classification simultaneously, drastically reducing computation time.

Literature Review

- ***"A Scalable Conversational Agent for Health Coaching"***

  Existing Systems: Traditional health monitoring systems rely heavily on static platforms, such as mobile applications or websites, which provide limited interaction with users. These systems often require manual input and lack the ability to offer real-time, dynamic feedback based on ongoing interactions. Furthermore, existing health coaching assistants struggle with scalability and adaptability, especially when catering to a large user base with varying needs.

  Methodology/Approach: This paper proposes a scalable conversational agent designed to act as a health coach. The agent interacts with users in real-time, learning from user input to provide personalized health advice. The system incorporates natural language processing (NLP) to interpret user queries and make recommendations. It also uses decision-making algorithms to adapt responses based on the context and health status of the user, ensuring that the interaction remains relevant and engaging.

  Key technologies used include:

1. Natural Language Processing (NLP) for interpreting user inputs and generating meaningful responses.
2. Scalable Architecture that allows the agent to handle a large number of users simultaneously while maintaining real-time interaction.
3. Personalization Algorithms to tailor advice based on individual user health data and preferences.

Literature Review

- ***"AI Applications in Veterinary Medicine: Current State and Future Potential"***

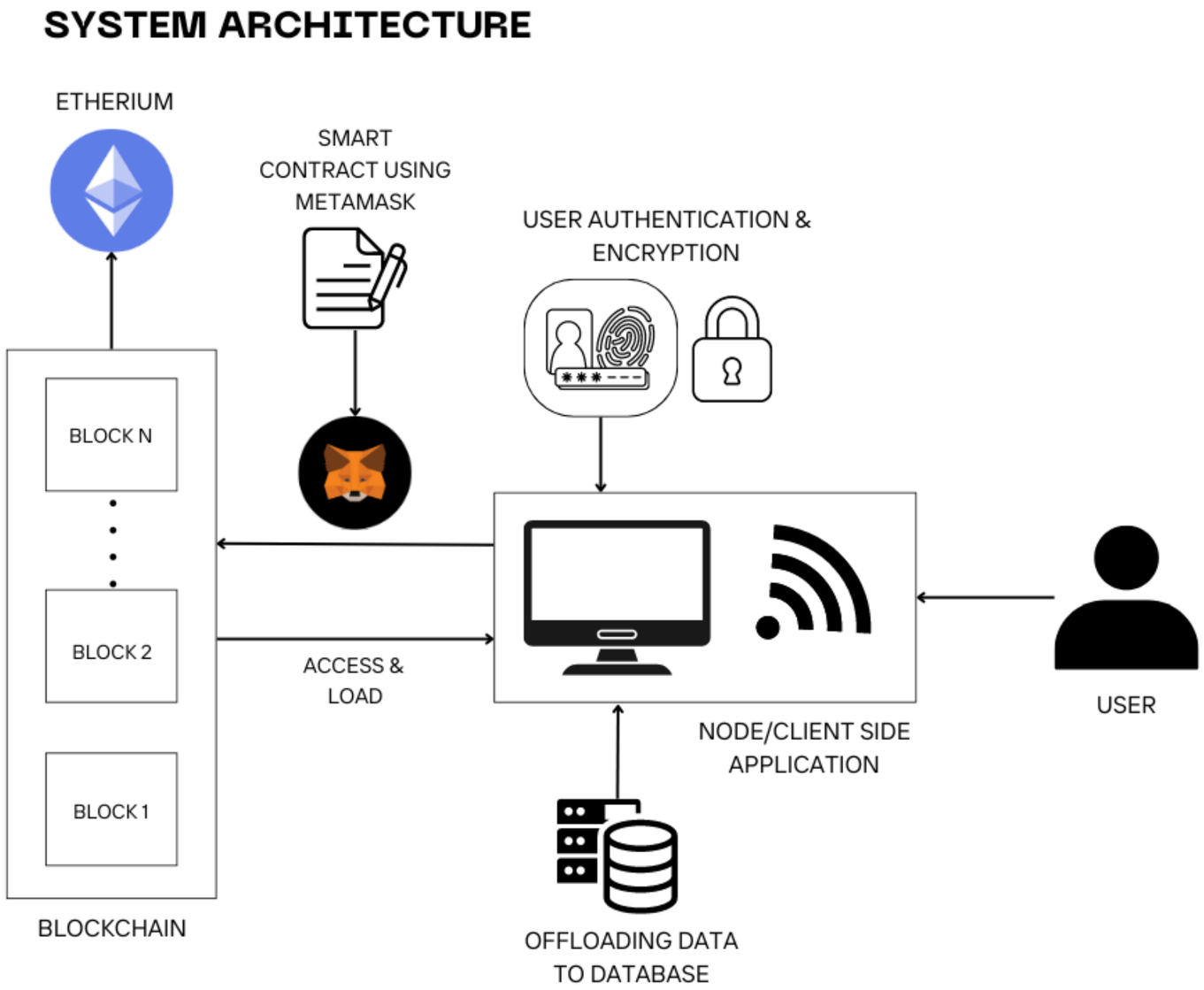
  Existing Systems: Traditional veterinary care relies heavily on manual diagnostic procedures, which can be time-consuming and prone to human error. Veterinary professionals often depend on physical examinations, lab results, and radiographs for diagnosing animal health issues. While advancements in medical technologies have improved diagnosis and treatment, the veterinary field has been slower to adopt AI-driven solutions compared to human healthcare, particularly in leveraging predictive analytics and automated decision-making.

  Methodology/Approach: This paper reviews the current AI applications in veterinary medicine and explores their future potential. It highlights how machine learning and deep learning models can analyze large datasets, such as medical records and imaging data, to assist in disease diagnosis, treatment planning, and monitoring of animal health. AI is being integrated into veterinary tools to enhance diagnostic accuracy, predict disease outbreaks, and offer personalized care recommendations.

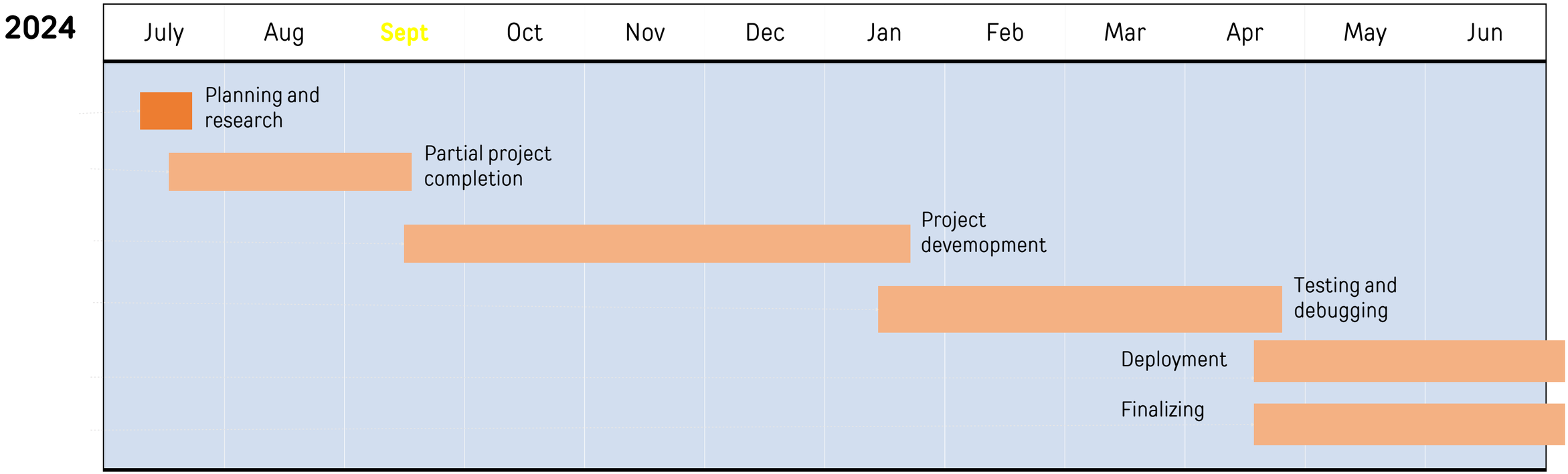
  Key technologies used include:

1. Machine Learning Algorithms for analyzing medical data and improving diagnostic accuracy.
2. Predictive Analytics to forecast potential disease outbreaks and track health trends in animal populations.
3. AI-driven Diagnostics that use image processing and pattern recognition for early detection of diseases in animals.

System Architecture/ Block Diagram



Project Timeline



Literature Review

- ***Observations and conclusion of Existing Work***
- The research papers collectively emphasize the transformative role of AI in real-time object detection, personalized health coaching, and veterinary care. YOLO's fast, unified detection makes it ideal for identifying injured animals in your app. The conversational agent model demonstrates how NLP can be leveraged to offer real-time, personalized first-aid advice. In veterinary medicine, AI's ability to enhance diagnosis and predictive care directly supports your goal of automating animal health assistance. Together, these technologies provide a strong foundation for developing an efficient, AI-driven platform for animal first aid and health support.

References

- **Published Literature/ Research Papers,**

1."You Only Look Once: Unified, Real-Time Object Detection"
Authors: Joseph Redmon, Santosh Divvala, Ross Girshick, Ali Farhadi
Year: 2016

2."AI Applications in Veterinary Medicine: Current State and Future Potential"
Authors: Sarah Stewart, Jake Robinson
Year: 2022

3."A Scalable Conversational Agent for Health Coaching"
Authors: N. B. Kocaballi, L. Quiroz
Year: 2020

Thank You!!!