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PROJECT PHASE -1

Team No : 1

Guide: Prof. Vinayaka VM

Team Members:

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Department: Computer Science and Technology

University : Dayananda Sagar University

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TITLE :

Centralised Aid and Response Platform for welfare facilities using AI based Image Recognition for Issue Categorisation

ABSTRACT

In today's fast-paced world, addressing emergencies and welfare needs for both people and animals often suffers from inefficiencies due to fragmented communication between various aid organizations. The Centralized Aid and Response Platform (CARP) aims to bridge this gap by providing a unified, AI-driven platform that facilitates real-time issue reporting and response coordination. CARP leverages geolocation and AI-powered image recognition to automatically categorize reported issues—such as animal rescue, elderly care, or community aid—and directs them to the relevant facilities like NGOs, animal aid centers, or old age homes within the area.

Introduction

The Centralized Aid and Response Platform (CARP) is a unified system designed to coordinate and optimize the response to emergencies and welfare activities. It brings together NGOs, animal aid centers, old age homes, daycare centers, and similar social services into a single platform. Citizens can report issues such as injured animals, elderly care needs, or broken public infrastructure. The platform will route these reports to the nearest relevant aid facilities, ensuring timely and efficient responses. By integrating geolocation services, AI-driven image recognition, and real-time notifications, CARP will streamline the process of issue reporting and resolution.

Problem Statement

To design and develop an AI powered platform to streamline and automate community welfare responses, improving efficiency across diverse aid services

Proposed Solution with Methodology

- Centralized Platform for Reporting and Response: CARP provides a unified platform where users can report welfare issue
- AI-Driven Image Recognition for Categorization: The platform utilizes AI to analyze and categorize the uploaded images (e.g., identifying a stray dog or elderly person in need). This ensures the issue is routed to the appropriate aid center.
- Real-Time Geolocation-Based Notifications: Relevant aid facilities within the vicinity of the reported issue are instantly notified, enabling quicker and more targeted responses.
- Real-Time Communication: Facilitates coordination between users, volunteers, and NGOs.

Proposed Solution with Methodology

AI Architecture and Implementation Plan

1. AI Model Architecture

1.1 Image Recognition Model

- **Model: A Convolutional Neural Network (CNN) will be used for image recognition and classification. CNNs are chosen because of their proven ability to accurately detect and analyze spatial features in images.**

- **Training Dataset:**
  - **Open-Source Datasets: Pre-existing datasets (e.g., ImageNet, COCO, AWID) will provide foundational learning for tasks like stray animal detection and identifying distress patterns.**
  - **Custom Dataset: Real-world images will be collected from NGOs, public contributions, and local welfare organizations to ensure relevance and accuracy for CARP-specific issues.**

Proposed Solution with Methodology

2. Data Collection and Labeling

2.1 Data Sources

To train the CNN effectively, a diverse and balanced dataset will be curated from the following sources:

1. **Open-Source Datasets:**
   - **ImageNet: General-purpose images for pre-training.**
   - **Stanford Dogs Dataset: For breed classification of stray dogs.**
   - **Animal Injury Dataset (AWID): Focused on various injury types and severity in animals.**
2. **NGO Contributions**

3. **Public Contributions:**
   - **Images submitted by volunteers, animal shelters, and community health workers through CARP's platform.**
   - **Local partnerships with veterinary clinics, community centers, and government welfare programs.**

Proposed Solution with Methodology

2.2 Labeling Process

- **Tools: Images will be labeled using tools like LabelImg and CVAT for precise annotations.**
- **Categories for Annotation:**
  - **Stray Animals: Injured, malnourished, or abandoned animals (e.g., dogs, cats, cattle).**
  - **Abuse Cases: Categorized by severity levels (mild, moderate, severe).**
  - **Elderly in Need:**
    - **Medical Emergencies: Critical, urgent, stable.**
    - **Mobility Issues: Severe, moderate, mild.**

Workflow

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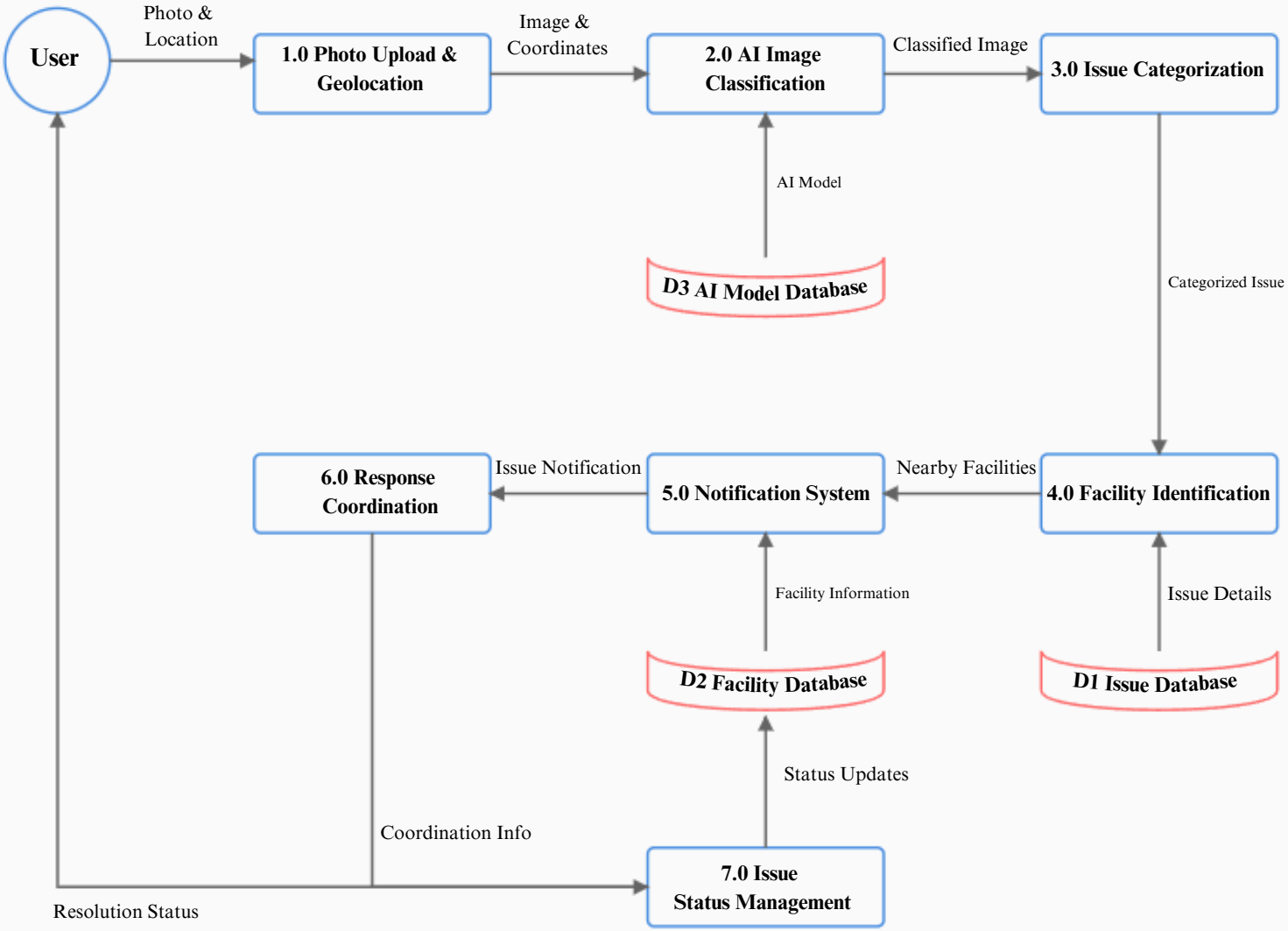

Figure: Work Flow

Literature Survey

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Title	Author	Proposed Work
Using Machine Learning and AI to Find Homes for the Voiceless	Neha Jha, Anushka Chaurasia, Pradyuman Chauhan & Vansh Rajput	K-Nearest Neighbor (KNN) algorithm to recommend pet breeds based on user preferences and lifestyle factors. The app features a question-based recommendation system and content-based filtering to personalize pet recommendations further
Integration of Multiple Technologies in Web Environment for Emergency Management	V. Bhanumurthy & Vinod Kumar Sharma	integration of technologies such as Remote Sensing (RS), Geographic Information Systems (GIS), Global Positioning Systems (GPS), and web technologies to manage emergency situations effectively. It proposes a framework that provides tools for disaster management, including real-time data collection, decision support, and communication systems
Development of Web-based System for Animal Shelter and Rescue in Johor State	Mabel Weeuthm, Hanayanti Hafit & Bernard Leong	Platform to support animal shelter and rescue organizations in Johor State, Malaysia, by enabling these organizations to register and manage their profiles effectively. It features a donation management system, a volunteer management system and a reporting system for animal abuse.
Citizen-based Sensing of Crisis Events: Sensor Web Enablement	Sven Schade, Laura Díaz, Frank Ostermann, Laura Spinsanti, Gianluca Luraschi, Simon Cox, Manoli Nuñez & Bertrand De Longueville	Integrates Volunteered Geographic Information (VGI) with Sensor Web Enablement (SWE) to detect and monitor crisis events. The system's core idea is to treat VGI as a valuable, real-time data source that can be structured and processed similarly for event detection

EXISTING WORK V/S PROPOSED WORK

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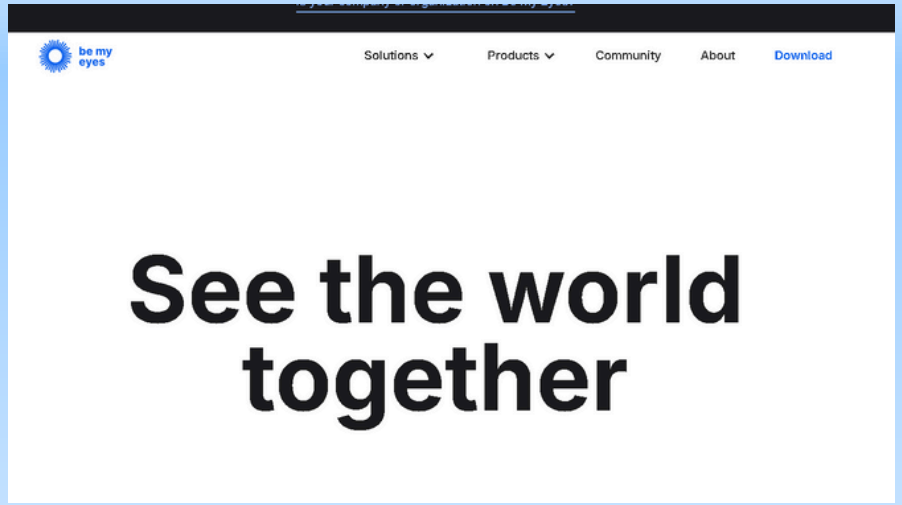
EXISTING RESEARCH WORK LIMITATIONS	PROPOSED RESEARCH WORK TO OVERCOME
1. Using Machine Learning and AI to Find Homes for the Voiceless: - Limited to adoption services only. - No Emergency Response Mechanism: lacks features for immediate action like calling an ambulance for injured animals or alerting emergency services. Lacks location detection feature.	Broader Functionality - instead of focusing solely on facilitating pet adoption, the system integrates a full spectrum of services, including emergency response features fostering a more holistic approach to animal welfare.
2. Integration of Multiple Technologies in Web Environment for Developing an Efficient Framework for Emergency Management: - Focuses on official reports, not community-driven inputs. - Lack of specialization: General emergency management framework, not focused on specific areas like anima rescue. - No collaboration between organizations emphasized.	In contrast to the framework for emergency management that emphasizes official reports and lacks user-generated inputs, CARP incorporates community-driven data Users can report incidents of animal abuse or stray animal sightings, allowing for a more agile response mechanism and fostering community engagement in rescue efforts.
3. Development of Web-based System for Animal Shelter and Rescue in Johor State: - No AI-Driven Features for Issue Categorization: Relies on manual input for donations, volunteers, and reports. - Manual Reporting System: Lacks automated detection or categorization for animal abuse reports.	The proposed system introduces AI-driven features for issue categorization, enabling automated detection and classification of reported issues. This reduces manual workload and enhances efficiency in handling cases of abuse or rescue requests.
4. Citizen-based sensing of crisis events: sensor web enablement: - Relies heavily on user-generated content from social media platforms. - Focuses only on large-scale environmental crises like floods or wildfires, not applicable for localized events like animal rescue or abuse.	CARP focuses on localized welfare issues,it ensures that smaller-scale events, such as stray animal rescues or reports of abuse, are effectively monitored and acted upon.

EXISTING WORKV/S PROPOSED WORK (Platforms)

EXISTING PLATFORM	DESCRIPTION	CARP (PROPOSED PLATFORM)
Be My Eyes	App connecting visually impaired individuals with sighted volunteers through live video calls for real-time assistance using geolocation.	CARP will facilitate real-time aid by matching users with relevant NGOs and services, utilizing geolocation and collaborative efforts.
Petfinder	Platform helping individuals find pets for adoption by connecting them with animal shelters and rescue centers.	CARP will integrate AI-driven image recognition to enhance animal rescue, including categorizing reports of lost or injured animals.
Uber for Volunteers (Concepts & Pilot Programs)	Systems connecting volunteers with people in need using geolocation and matching algorithms, akin to Uber for aid workers.	CARP will optimize volunteer coordination by adding AI-based predictive analytics to improve resource allocation and response times.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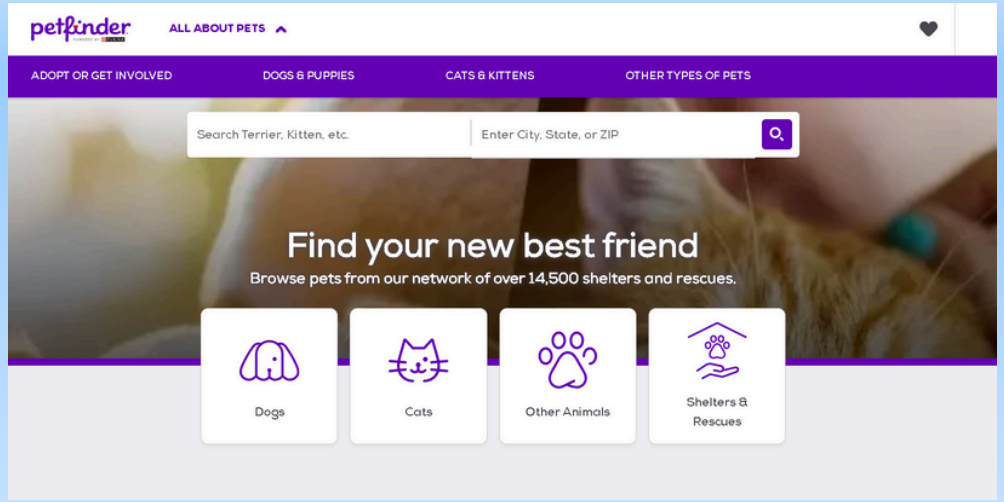
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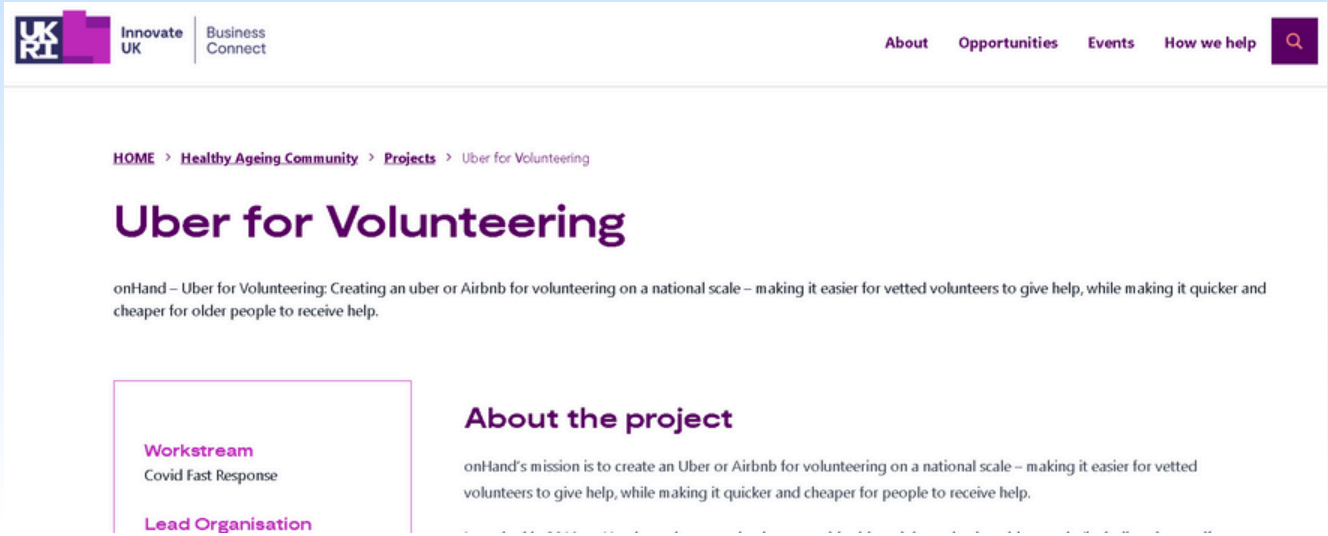
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Opportunities
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How we help
HOME > Healthy Ageing Community > Projects > Uber for Volunteering
Uber for Volunteering
onHand – Uber for Volunteering: Creating an uber or Airbnb for volunteering on a national scale – making it easier for vetted volunteers to give help, while making it quicker and cheaper for older people to receive help.
Workstream
Covid Fast Response
Lead Organisation
About the project
onHand's mission is to create an Uber or Airbnb for volunteering on a national scale – making it easier for vetted volunteers to give help, while making it quicker and cheaper for people to receive help.

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Roadmap

Research & Planning

3rd - 4th month

Core Platform Development

6th -8th month

Integration & Testing

8th -10th month

Architecture & Design

4th -6th month

Launch & User Feedback

10th -12th month

References

1. Jha, N., Chaurasia, A., Chauhan, P., & Rajput, V. (2024, March). Using Machine Learning and AI to Find Homes for the Voiceless. In 2024 2nd International Conference on Disruptive Technologies (ICDT) (pp. 831-836). IEEE.

2. Bhanumurthy, V., and Vinod Kumar Sharma. "Integration of multiple technologies in web environment for developing an efficient framework for emergency management." Proceedings of International Conference on Remote Sensing for Disaster Management: Issues and Challenges in Disaster Management. Springer International Publishing, 2019.

3. Wee, Mabel, Hanayanti Hafit, and Bernard Leong. "Development of Web-based system for Animal Shelter and Rescue in Johor State." Applied Information Technology and Computer Science 3.2 (2022): 479-495.

4. Schade, Sven, et al. "Citizen-based sensing of crisis events: sensor web enablement for volunteered geographic information." Applied Geomatics 5 (2013): 3-18.

5. Bharadiya, J. "Convolutional neural networks for image classification." International Journal of Innovative Science and Research Technology 8.5 (2023): 673-677.

6. https://www.bemyeyes.com/

7. https://www.petfinder.com/

References

7.HelpAge India Karnataka
113, Royal Corner No 1 & 2, Lal Bagh Road, Bengaluru – 560027
Contact Person: Mr. M. Prakashan, State Head- Karnataka
E-mail: bangalore@helpageindia.org
Contact: 080-22213107/22124594 / 9980355166

8.Charlies Animal Rescue Centre – CARE
Survey No. 124, Mitteganahalli Cross,
Kogilu Village, Yelahanka Hobli,
Bangalore North, 560064
P: 9483911110 / 9035999372

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Thank You !!!