かるかる🐾 : Re-identification Application for Stray Cats Post-TNR Program

Group H:
Ryusei (2600240348-9), Jonathan (2600240466-3)
Kanato (2600240283-0), Jocelyn (2600240463-9),
Parth (2600240452-3), Yukiya (2600240271-7), Ananna (2600240445-0)

June 3rd , 2025
College of Information Science and Engineering
Ritsumeikan University

Outline

- Background

- Goal

- System Workflow

- Vision

- Literature Review

- Interview Results
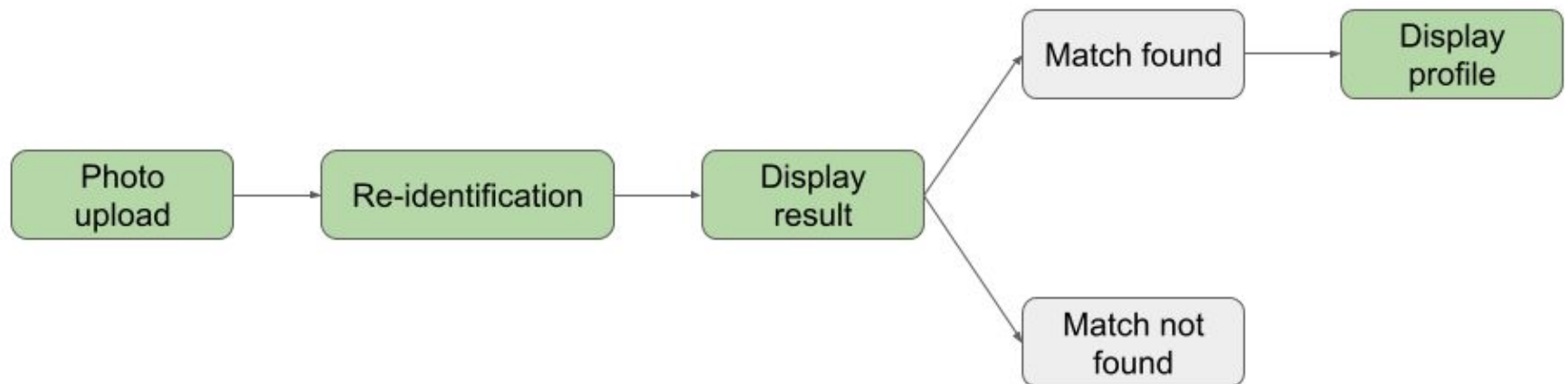
- System Requirements

- Data Acquisition

- Conclusion

Problem statement:

- Various stray cat caregivers don't have a streamlined method to keep track of a cat's medical records

- The same cat ends up being taken to a clinic or hospital unnecessarily due to a lack of recording measure

- Prevent the same stray cat from being taken to the hospital multiple times

- Provide a convenient method for volunteers to re-identify stray cats and see their information

- Increase efficiency and reduce mistakes in TNR (Trap - Neuter - Return) operations

User side:

- Volunteer groups or individuals can volunteer to keep track of the local stray cat conditions

- Expansion to include forum functionality to cultivate better community engagement

- **Levy, J.K.; Crawford, P.C. (2004)**

  - Highlights the importance of **Trap-Neuter-Return (TNR)** as a more humane alternative to euthanasia-based population control
  - Discusses **ethical and ecological impacts** of unmanaged stray cats

- **Boulouaouane, Y. et al. (2024)**

  - Proposes a **deep learning-based biometric technique** for identifying individual pets (cats and dogs)
  - Discusses challenges such as **variation in lighting, pose, and occlusion**

- **Chen, P., et al. (2021)**

  - Procedure of developing a cat recognition system

  - Data from Kaggle and scraping social media

- **Trein, T. and Gracia, L. (2025)**

  - Cat re-identification with camera positioned towards feeding stations

First Interview Results

Interviewee:

Animal Shelter Staff

- Implant microchips

- Paper record – able to provide data

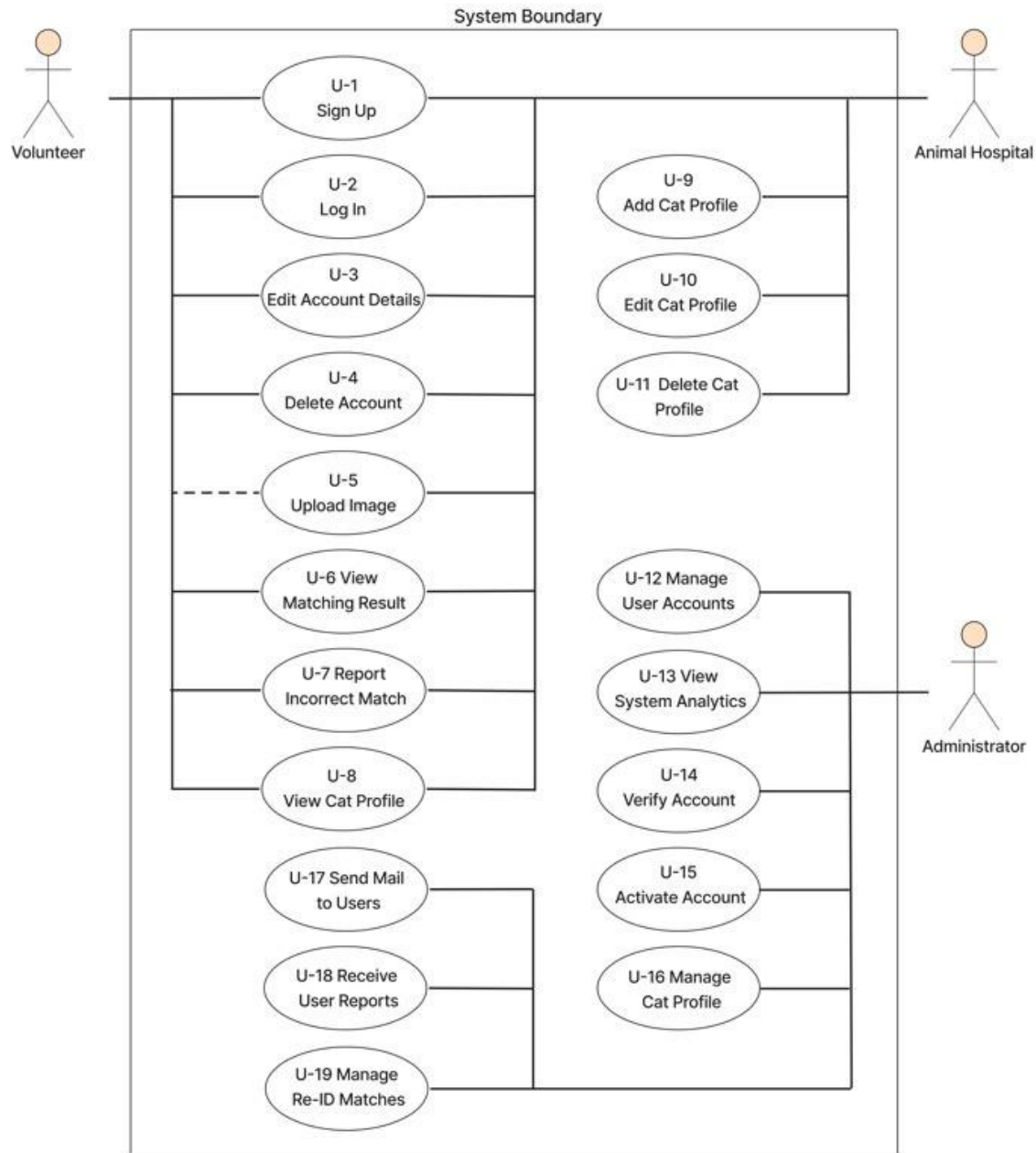- After a cat is released, shelters do not care or provide for the cat

Interviewee: Animal Hospital that conducted TNR

- Animal hospitals often collaborate with different organizations, sometimes even a group of individual caretakers

- Problem in re-capturing

  - There's a need for a tool that volunteers can use to identify a cat before capturing it and taking it to the hospital; hence, preventing redundant check-ups

Use-Case Diagram

System Requirements

- Allow users to upload images of stray cats and receive feedback on possible profile matches

- Display cat profiles which include details such as medical history, approximate age, and gender

- Enable role-based account types with varying access for volunteers, animal hospitals, and organisations

- Allow animal hospitals to make changes and adjustments to cat profiles and medical records

- Allow users to make suggestions and reports to administrators

Data Acquisition

- Existing Online Dataset

  - Kaggle dataset

- Web Scraping from Cat Welfare Website

- Offline records from organizations, volunteers, and animal hospitals

- The project aims to address issues in stray cat management, specifically the difficulty of identifying each stray cat and tracking their medical condition

- Interviews were held with specialists in animal welfare as a part of requirements elicitation

- System requirements to specify what the system does