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Lost Animal Platform

StraySafe team

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Project motivation

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We want to create a comprehensive product that will **help pet owners find lost pets, and try to unite a global community** engaged and interested in solving this problem by introducing intuitive features to efficiently find lost pet owners.

- **CRUD** operations on a reports for found and lost pets
- Smart searching based on **image and attributes**
- **PDF poster generation**
- API usage for automatic posts on social media
- Map pop-ups with data about shelters, lost and found pets
- **Account system** for management of user data

Comparing images

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- SSIM
- Color histograms
- Texture histograms
- Edge detection



Figure 1: cat in the kitchen

SSIM - Structural similarity index measurement.

- Measuring perceptual difference between images
- Capturing texture and structural similarity

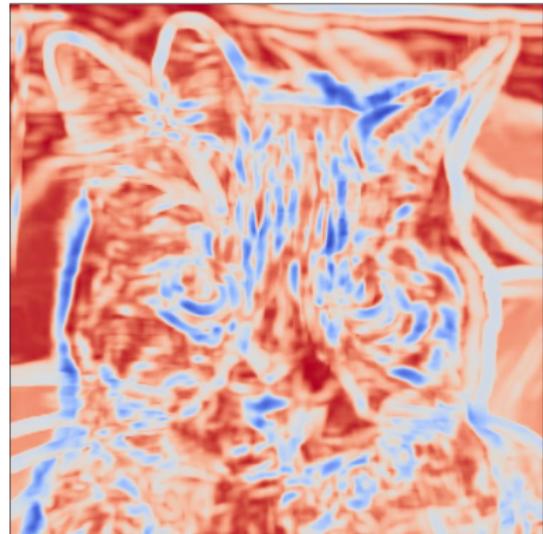


Figure 2: SSIM of two cat images

Color histograms

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Color histograms - a representation of the distribution of colors in an image [2]

- Summarizes color distribution
- Facilitates color-based comparison
- Simple and effective under varying conditions

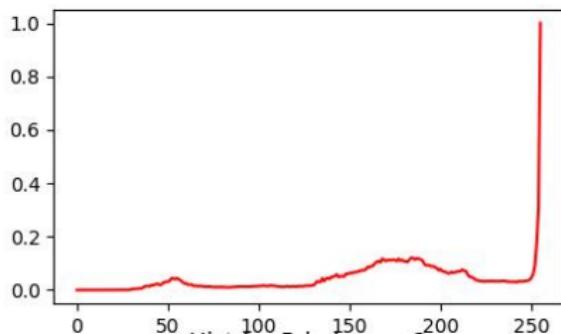


Figure 3: Red color distribution of cat image

Texture histograms

Texture histograms - distribution of texture patterns within an image.

- Characterizes local texture patterns
- Shows similarities or differences in texture features



Figure 4: Texture histogram of cat

Edge detection

Canny edge detection -
multi-stage algorithm to detect a wide range of edges in images. [1]

- Identifies pet silhouettes
- Reduces noise



Figure 5: Edge differences between 2 images

A lot more things could be done with machine learning such as

- Report form pre-filling
- Accurate feature extraction, cropping
- Bad actor filtering

- **LibreTranslate** - open source tool written in python. We will self host this on our webserver machine and it will translate user content such as **notes, descriptions and comments**.
- Based on the keywords found on the web, we will focus on **filtering out swear word** categories such as swear words, offensive words, dirty words.

Analysis conclusion

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Will be used:

- Color histograms
- Texture histograms
- LibreTranslate

Will not be used:

- SSIM
- Edge detection
- Machine learning

Use cases

- Searching for lost pets
- Searching for the owner of pets
- Spreading the word
- Volunteering
- Support and socialisation

Use case diagram part I

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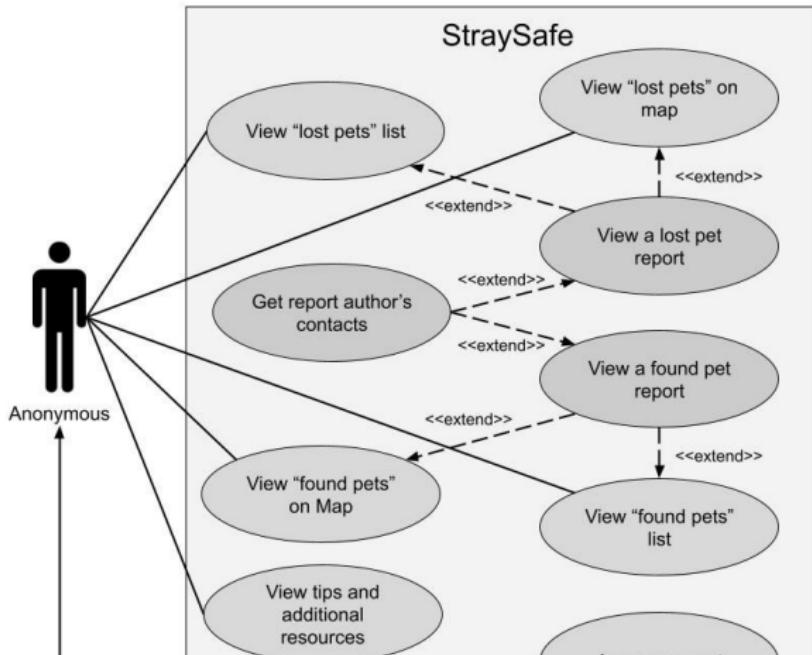


Figure 6: Use case diagram part I

Use case diagram part II

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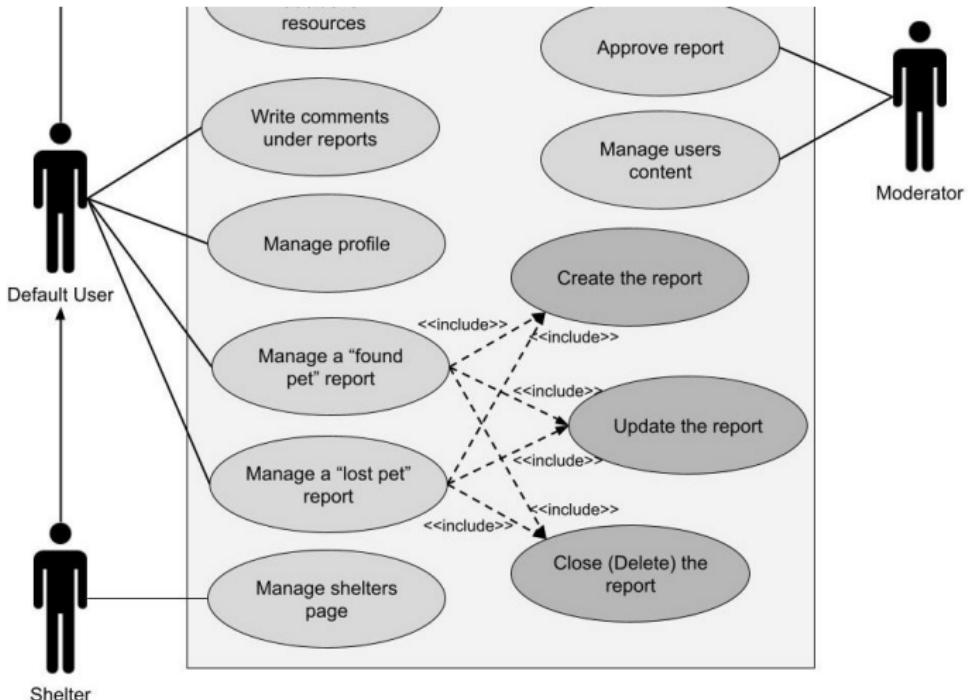


Figure 7: Use case diagram part II

Functional requirements I

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- **Pet Reports:** Users can report lost/found pets with images and details.
- **Image Comparison:** System compares the pet images uploaded to the reports with other images.
- **Multilingual:** Support for multiple languages, user language preferences.
- **Views and Filtering:** Map and grid views, area and attribute-based filtering.

Functional requirements II

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- **Moderator System:** Special user role with permissions for content management.
- **Information Pages:** Guidelines on handling lost pets.
- **Responsive Design:** Interface optimised for desktop, tablets, and mobiles.
- **Dark Theme:** Option for users preferring a dark visual style.
- **User Accounts:** Register, login, manage profiles, and recover accounts.

Architecture

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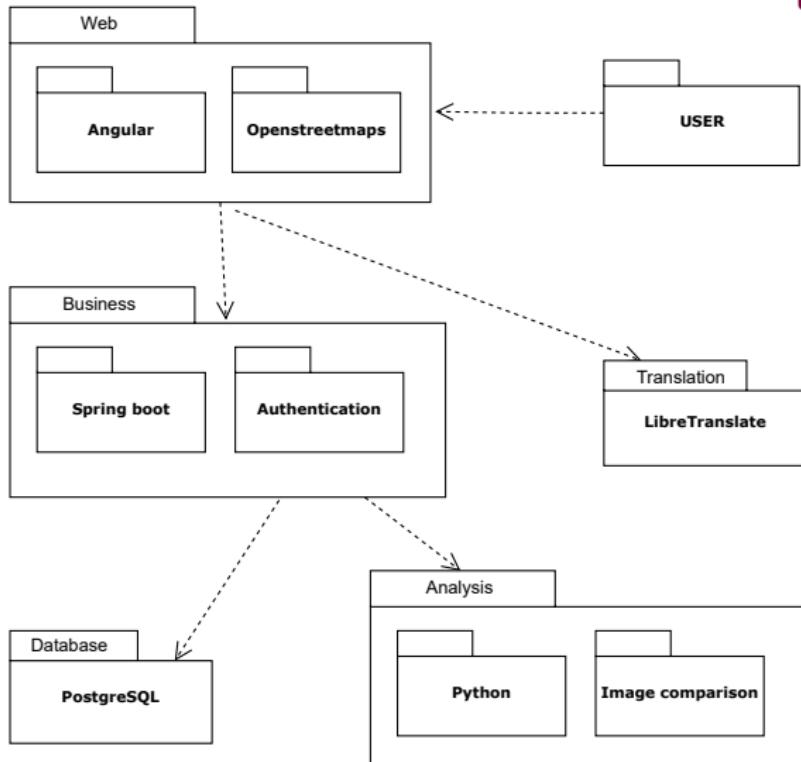
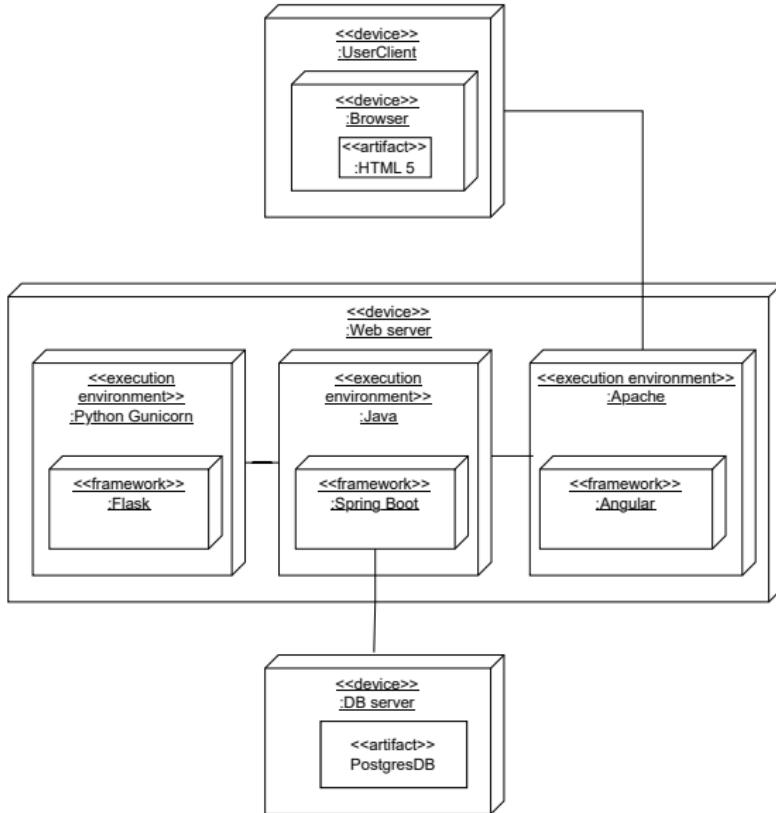


Figure 8: System architecture

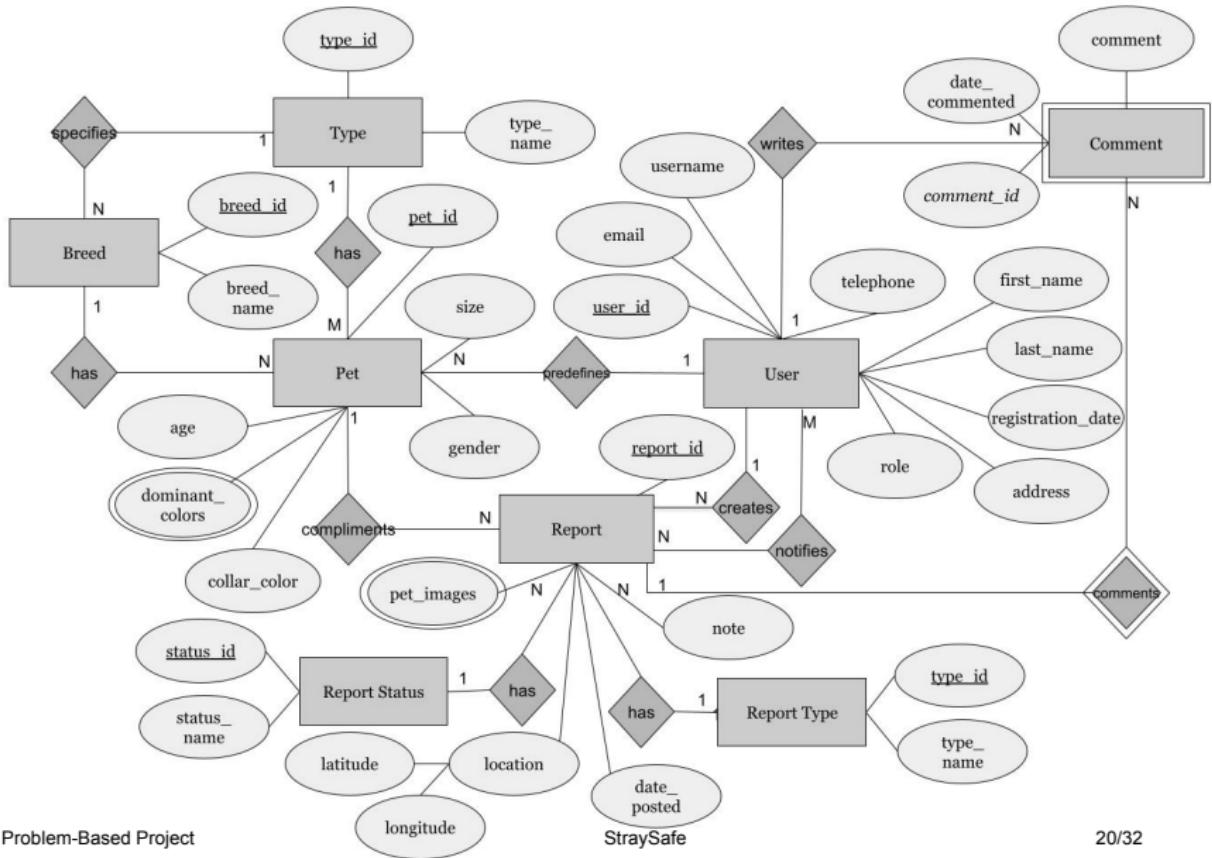
Deployment diagram

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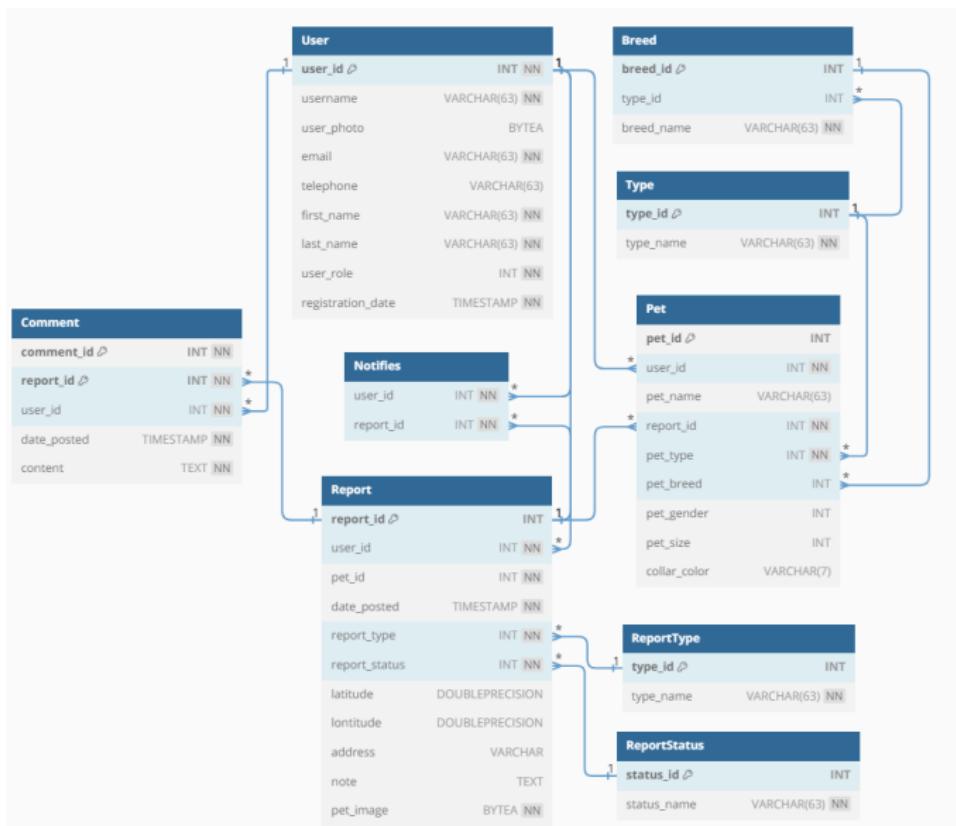
Entity Relationship model

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Relational schema

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- **Web server:** Apache
- **Frontend:** Angular framework, tailwind css
- **Algorithm Backend:** Python
- **Database Backend:** Java (Spring boot)
- **Database:** PostgreSQL
- **Libraries:** OpenStreetMap API, Facebook API, LibreTranslate.
- **Deployment:** Gitlab runner with Ansible

Image of a pet

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Welcome page

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Search Tips and Resources

StraySafe

English

Profile

We're here to help you find your pet

StraySafe is a free platform specialised in helping to find missing pets and their owners.

I Lost a pet

I Found a pet

Pet location specification page

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Search Tips and Resources

StraySafe

English Profile

Specify the location
Indicate the place where you last saw the pet.

Didžiaukio 59

Search

Next Step

Pet attribute specification page

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Upload a photo of the pet

Choose the best quality photo possible that clearly shows pet's face.



Upload another photo

LOST Pet Information

Give as many exact parameters of the pet as possible.

* Indicates required option

Your pet is already in your pet lists? Choose the pet or enter pet id [here](#)

Enter pet name*

Bigis

Type*

Dog

Size*

Medium

Gender*

Male

Age*

Adult

Colors

Main dominant color



Second dominant color



Collar color



Breed*

Beagle

Additional notes

Lost at iki supermarket.

I am agree to share my contacts data located in my profile

I am agree with [Privacy policy](#)

Preview report

Submit the report

Pet report preview page

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Author: Viktor Barinov @clotemone
Posted: 18 of April

LOST

Pet Information
report identifier: [REPORT IDENTIFIER](#)

Update **Delete** X



Pet name Bigis

Type Dog Breed Beagle

Size Medium Gender Male

Age Adult

Colors

Main dominant color #b0a7a0 Second dominant color

Collar color #b6b6b7

Notes Lost at iki supermarket.

Telephone +37062271255

Report tags

DOG **LOST** **ACTIVE**

Last seen location



Poster example

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MISSING DOG



Korra

Border Collie
Black/White
Red collar

Lost Since

Jan 5th, 2024

Last Seen At

Vingio Parkas

Unique traits

Has bump under ear

CALL OR TEXT WITH ANY INFORMATION

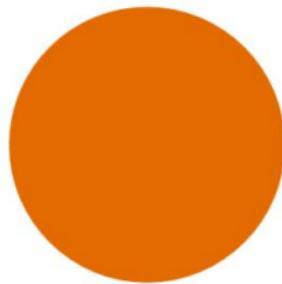
+370-604-11224

Team meeting timelogs

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2024-02-01 – 2024-04-24

TOTAL HOURS: 25:06:12



PROJECT

- StraySafe meetings

DURATION

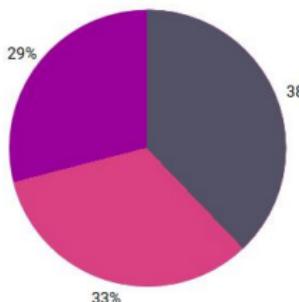
25:06:12

Individual timelogs

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2024-02-01 – 2024-04-24

TOTAL HOURS: 379:39:09



USER

- Renaldas Narbutas
- Arsenij Nikulin
- Edvinas Gerdvila

DURATION

- 143:42:13
- 125:39:28
- 110:17:28

Questions?

 Wikipedia contributors.

Canny edge detector — Wikipedia, the free encyclopedia, 2024.
Last accessed: 2024-04-23.

 Wikipedia contributors.

Color histogram — Wikipedia, the free encyclopedia, 2024.
Last accessed: 2024-04-23.