PetSnap: Cat Diseases Detector Related to Physical Gestures using OpenCV Library

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Abstract
The phenomena of unpredictable diseases and pandemics that we have been through since 2020 can prove that diseases need to be solved with high efficiency. Measurement of efficiencies depends on the time of solving the problem, the operational cost, and the errors of humans and tools. *PetSnap* offers the best solution to detect diseases experienced by cats that can be known from the visual symptoms seen in a pet's body capture using user camera. After getting the Yolov5 camera detector experience, the visual symptoms can be detected by four categorizations (scabies, fungi, abscess, and eyelid) closely to 1 in accuracy.
Key words: visual disease; Yolov5;

Introduction (Project or Innovation)

One of the contributions made by Indonesia in developing technology is to carry out application development in various sectors. One method of data processing is artificial intelligence (AI). AI is used in the optimization of work normally done by humans. Various sectors are developed through AI-based applications, such as education and Health. These two very important sectors can be combined into one with good system integration.

Content (Project or Innovation)

1. *Introduction*

   The human and animal interaction become very important to phychological today. Today world, the disease are difficult to detect since the pandemic of Covid-19 in early of 2020. Many factors related to the error of diagnose phases. Early diagnosis by pet owners are often causes errors in determining the disease that ultimately led to wrong first aid (Susanto et al., 2015) .Information from the internet has a limited number of images, making it difficult for pet owners to compare diseases through images. According to Veterinary Defence Society's research, 9% of errors in veterinary practice are caused by wrong diagnosis, and 5% by wrong advice (Oxtoby et al., 2015). Therefore, in integrating these three problems, PetSnap are made.

2. *Problem statement and research questions*

   1. How do cat owners know their cat being sick without visual symptom?

2. What are the solutions in educating the cat owners about cat diseases, especially in determining the first aid?

3. What will be the solution to reducing human error in veterinarians?

4. What will be the output after using the OpenCV features in PetSnap?

3. Solutions and the impact of innovation

The development of **PetSnap** can be a solution to answer the research of the current problem regarding the increase of human stress in post-pandemic. Cats and ailurophiles have their connection in achieving human well-being from pet attachment security, This explanation answered that petSnap with several features. Therefore, ailurophile can determine the cat disease with simple steps and treat with the best first aid. reviewing from the education domain, petSnap also answered the solution regarding cat dictionary disease and the solution features, it would be impacted to pet security attachment.

4. Research Methodology

Physical Gestures using OpenCV Library is proposed to get final result of 3D CNN output for determining the classification of cat diseases in this application, starting with 4.1. Flowchart, 4.2. Data Collection,

4.1. Flowchart

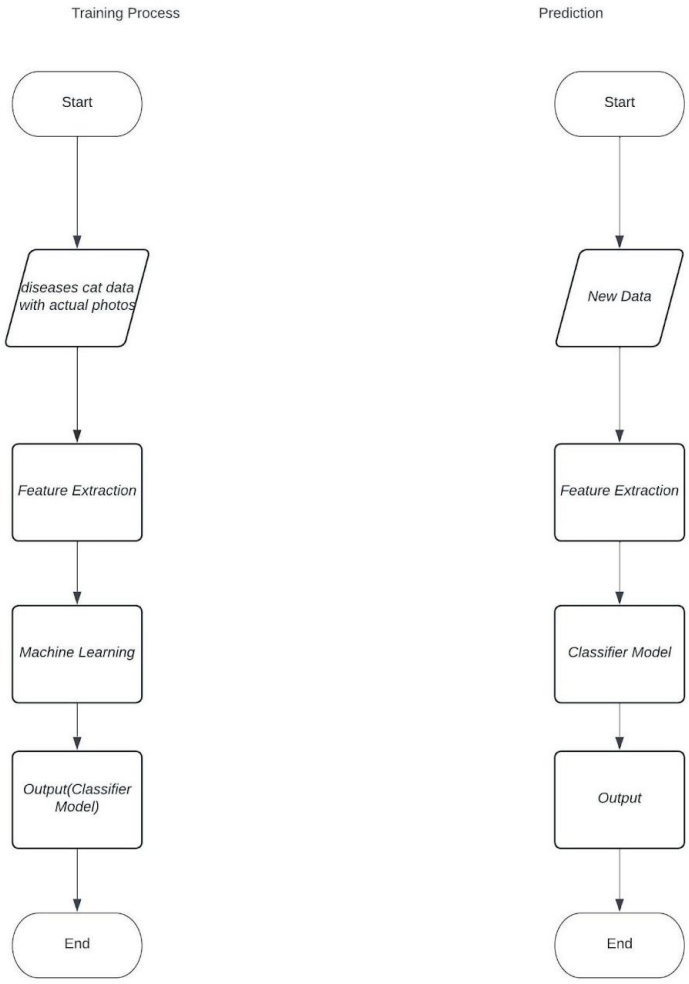

Figure 1. 3D CNN Flowchart

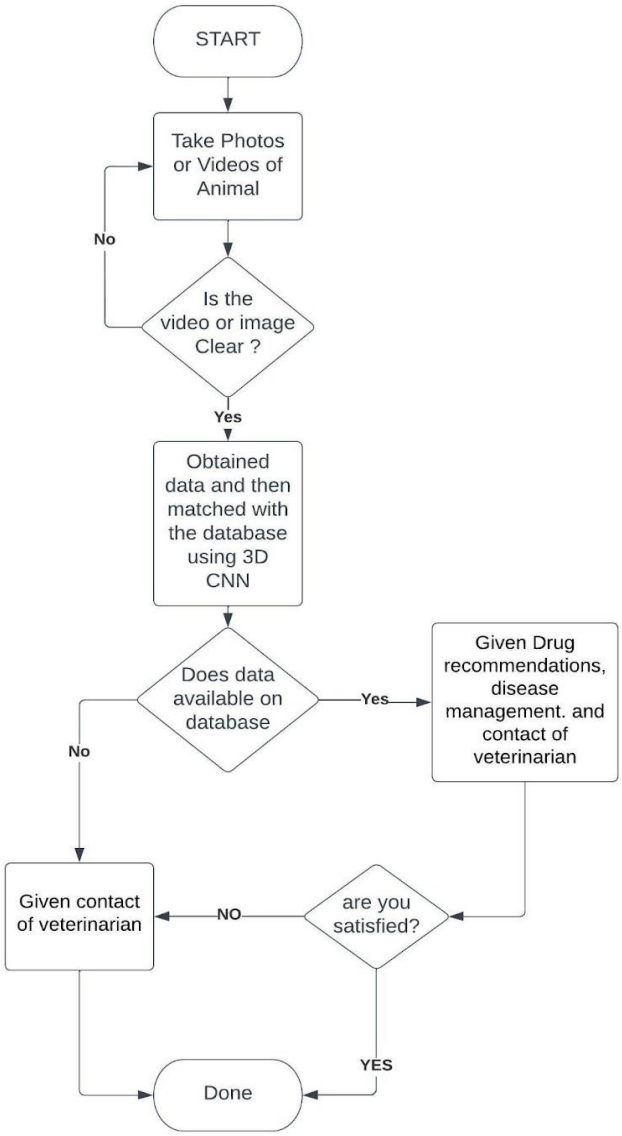

Figure 2. Workflow PetSnap application

4.2. Data collection

5. *Result / Expected Result*

In this application development, the result will be shown in Yolov5 with trajectory information of diseases if it is occurred. The used of frame per second and the quality of user camera will be crucial factor in finding the visual symptom in millisecond.

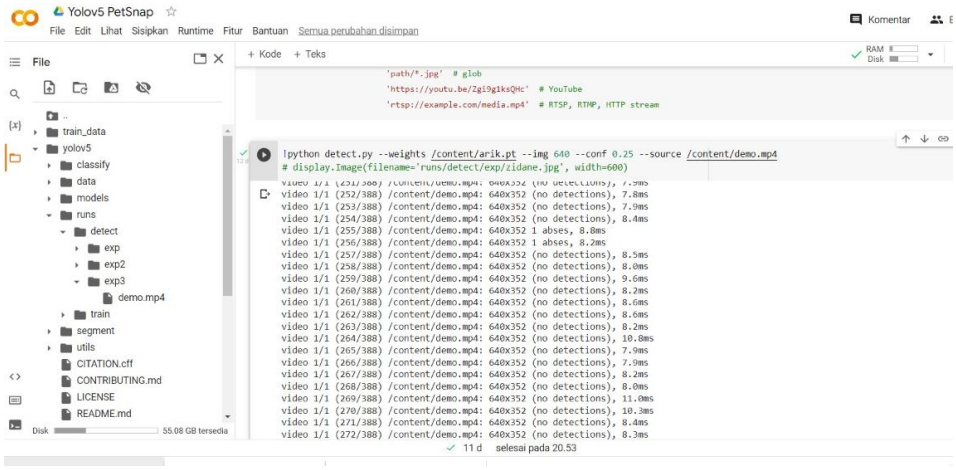

Figure 3. Yolov5 Detection in Time

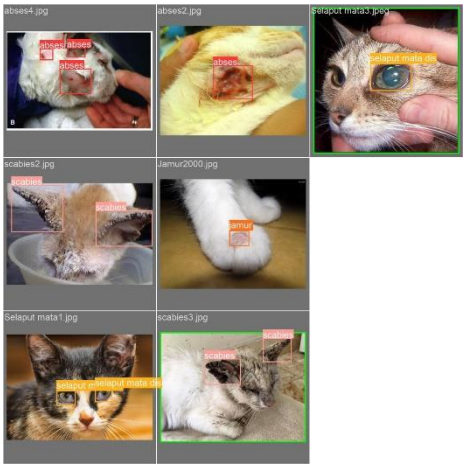

Figure 4. Disease detection

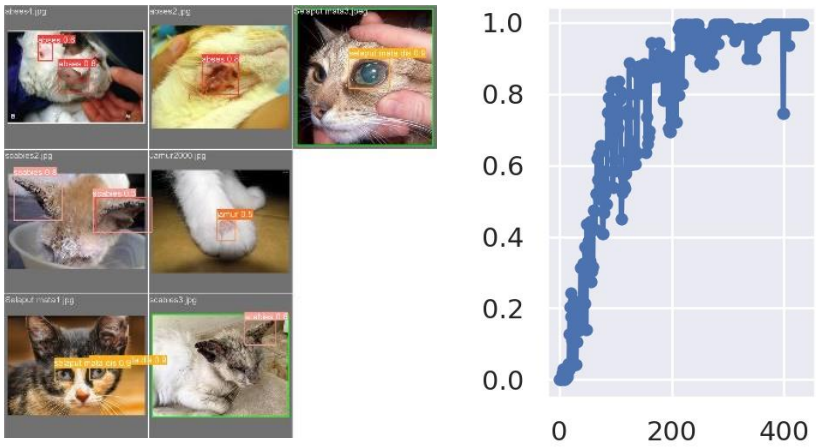

Figure 5. Disease accuracy from Yolov5

Referring figure 5, the visual cat disease can be detected in the accuracy of picture based on the video they have. The higher epoch of data will lead to high accuracy of detector, closely to number one.

6. *Discussion*

Referring to the accuracy, the result are closely related to the user camera on how they detect the diseases in frame per second mode.

The other perspective are related to the market and widely implementation. Since, the application are non profitable, the market and implementation are challenging. Therefore, making the management analysis are needed, consist of economical analysis, market analysis, and the milestones.

7. *Other relevant information*

7.1. Milestone

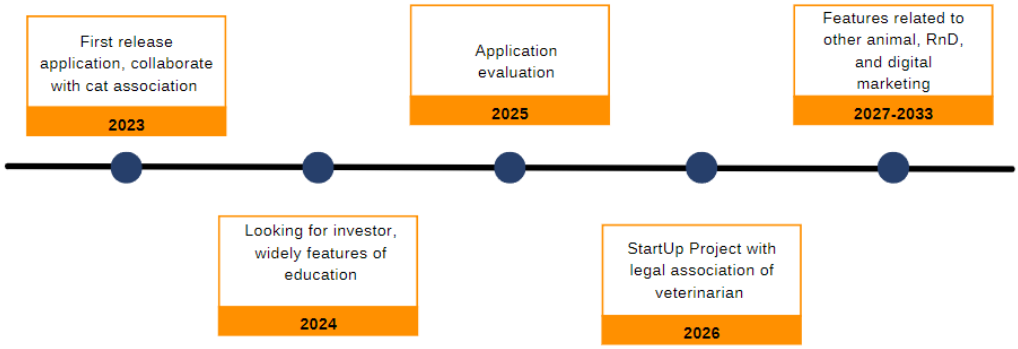

Figure 6. PetSnap 10 years Milestone

7.2. Economic analysis

Without the economical analysis, the business would not gain on its sustainability. Therefore, for the first release product or service, especially for the application, the economical analysis proved in capital expenditure, operational expenditure, and the human labor.

Parameter	**Cost (USD $)**
Development	808.15
UI/UX	101.02
Quality Assurance	202.04
Project Management	303.06
Launching	67.35
Total	**1481.62**

7.3. Target market

The market target are determined based on the TAM SAM SOM method, which the Serviceable Obtainable Market gain from the nearest home University city, Surabaya with total of user 1,000. For the Serviceable Available Market it is proposed to Indonesia citizen with total of user by 10,000. Beside, the Total Addressable Market gain in 45,000 for the user in the world.

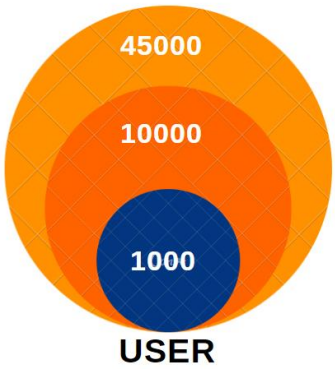

Figure 7. Target Market

7.4. Market strategy

Market strategy for digital application would be very challenging, furthermore it included as service start-up. The investment would be not identified by physical properties that the start up have, but it will be method how they get revenue from user properties. Hereby are the list of information system strategy in getting the market:

Strategy	**Implementation**
Segmentation	
Targeting	
Positioning	

Acknowledgement (if any)

We are grateful for the project accomplishment by 2023 with five members inside. We also thank to Mr. Dion Hayu as our lecture and supervisor for providing technical advice and facilities throughout the project. This project was made and proposed for ailurophiles and veterinarian to get faster in detecting the cat diseases. In the future, this application will lead to have widely animal types to detect their visual symptoms.

References

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