

10/04/2020 plan

正面，側面？ -> **規定input**

多照片vs多照片权重分配？

[\[Face recognition from multiple view\]](#)

-> **return 多隻寵物 by ranking -> Weight decided by evaluation**

幼儿照片 vs 当前照片 -> **取隨時間變化小的feature or 規定Input**

实景抓拍的照片如何抓取，如何识别 -> **規定Input**

低清或者high noise、高清 权重分配 -> **(Can't do this in MVP) or 後期加上恢復技術**

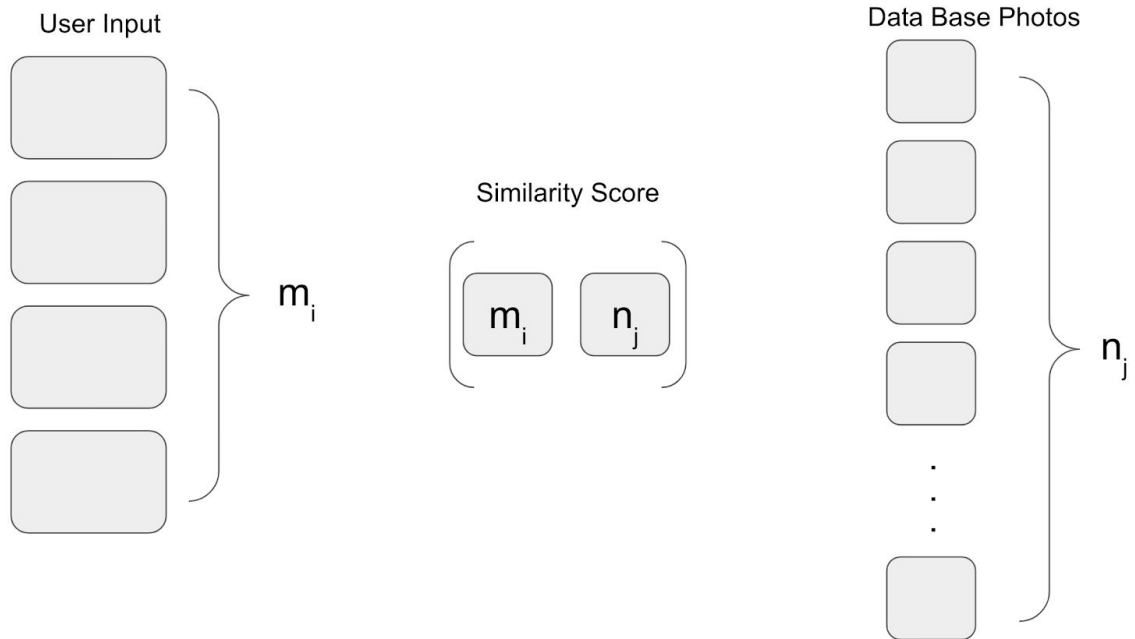
丢失过程中， 宠物可能受伤--- 改变样貌（ellen） -> **Can't fix (maybe + label)**

丢失过程中， 宠物可能丢失挂牌 --- 影响recommendation （ellen）

（金色的狗+红色的狗链 --我们分析中会把红色作为参考因素） -> **應該不會提取到這個**

Evaluation 问题： how to cut off the similarity threshold -> **score ranking (ex: 前5隻) + confidence level**

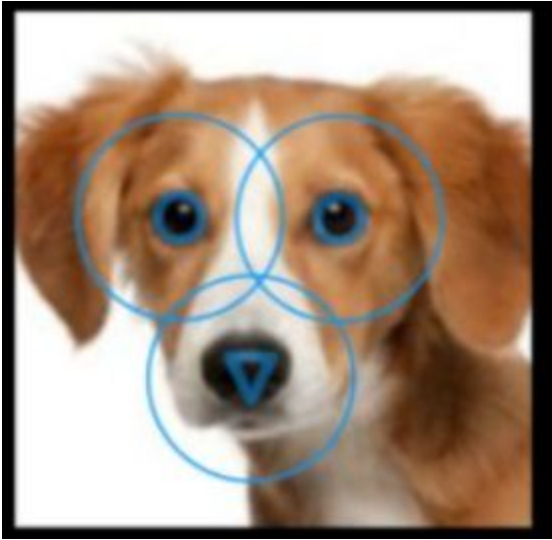
Evaluation： 如果用户在拍照的时候，同时也录入了**文字**， 可以用NLP进一步确认我们的 recommendation （ellen） -> **規定input with easy input way (符合dataset [Description](#)) -> 變weight問題 -> not include in MVP.**



Metric:

- For all m_i in user input photos M :
 - For all n_j in database photos N :
 - $\arg \max_k \text{Similarity}(n_j, m_i)$, where k_i is the top k similar photos
 - Find the corresponding pets and the average similarity which is grouped by pets. [1]
- Vote for the most similar pet based on the average similarity group by pets

[1]: For example, for the input image m_1 , it has k most similar photos which is about pet a , b . Then we have $\{m_1: [(a, \text{sim}_a), (b, \text{sim}_b)]\}$, where sim_a is the average similarity of pet a

Issue	Solution
Full Face and Side Face input image	<p>Input Regulation (Eyes and nose in right position)</p> 
Time gap (Only got cab pictures)	<p>Input Regulation (Warning)</p> <p>Warning: since we do not have the recent photos, we might not have the matching photos with high accuracy.</p> <p>Recommend more photos</p> <p>Select the features which are not sensitive to time change.</p>
Input picture noise and quality issue	<p>Input Regulation (Warning or require high quality images)</p> <p>Recover low quality images</p>
Text Features in image or input	<p>Not included in MVP</p> <p>For the following product, we might ask users to write a description about a lost pet or a survey including some multiple choices.</p>
Pet face change a lot after lost	<p>Not included in MVP</p>

參考資料:

小蓝 :

京东猪脸识别 :

<https://www.zhihu.com/question/67807877>

猪脸识别源代码 :

<https://github.com/SamuelLAN/jdPigRecognition>

https://github.com/zy123abc/pig_face_recognition

狗脸识别 :

https://link.springer.com/chapter/10.1007/978-3-030-29894-4_34

多照片vs多照片权重分配？

Lan: KAZE is a great model for identifying the same object in different images. If you had a database of images, like bottles of wine, this would be a good model for label detection, and finding matches based on the label of the wine.

实景抓拍的照片如何抓取，如何识别

Lan: SURF, ORB, SIFT, BRIEF...

低清或者high noise、高清 权重分配

Lan: ORB algorithm can even match those features of the same image that have been distorted(grayed, rotated, and shrunk).

<https://towardsdatascience.com/finetune-a-facial-recognition-classifier-to-recognize-your-face-using-pytorch-d00a639d9a79>

<https://www.kairos.com/blog/face-recognition-kairos-vs-microsoft-vs-google-vs-amazon-vs-open-cv>

http://www.stat.ucla.edu/~sczhu/Courses/UCLA/Stat_231/Stat_231.html

Joint Face Detection and Alignment via Cascaded Compositional Learning

Model: Sparse FRAME, a multi-layer probability distribution model captured the part deformation

Jointed cascade face detection and alignment by advanced boosting algorithm

Considered multi-domain to overcome unconstrained face data

Trained multi domain on same random forest with both detection and alignment in parallel

This work is based on "Joint cascade face detection and alignment" and "Unconstrained Face Alignment via Cascaded Compositional Learning". We aim to provide domain partition on the Joint cascade face detection and alignment method.

国外的一款FindingRover app 主要应用于寻找丢失宠物，其主要的技术也是依托于对宠物面部特征的识别。但其精准度和用户体验（找回率）究竟如何，味央君就不得而知了。

