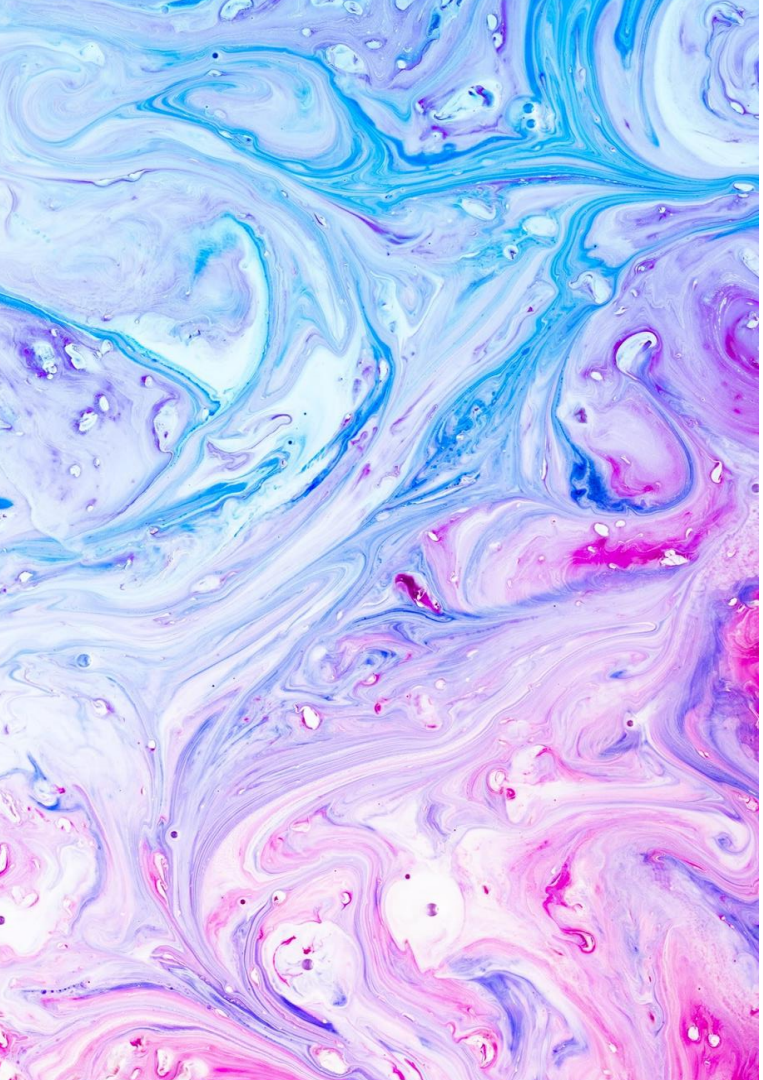

EduCraft: AI AND ART

目錄
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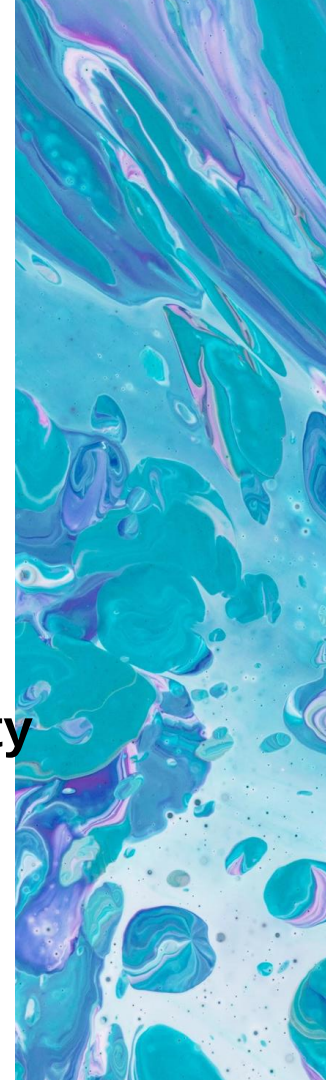


01 Introduction

User Story

Shi-Hua (世華) is a museum exhibition researcher at NPM (國立故宮博物院).

She has to:

propose 2~4 exhibitions projects every year.

work on her own research topic.

impossible to be familiar with all artcrafts

HOLDING AN EXHIBITION IS NEVER EASY & TIME CONSUMING...

Idea Genaration

Staffing Exhibition Projects

Overall Organization

Exhibition Selection Critirai and Approval Process

Project Management

There are more Curators like Shi-Hua (世華)...

CASE STUDY-NPM(故宮)

- The NPM has nearly **700,000** artifacts.
- With a collection of this size, only **1%** of the collection is exhibited at any given time.
- **Impossible** to be familiar with every art crafts in anyone's lifetime.

- An exhibition is planned about **1~2 years** earlier.
- A researcher usually has to deal with **1~2 exhibition** planning simultaneously, except special exhibition and collaboration.
- **Not familiar** with all exhibition topic/artcrafts.

02 Problem & Solution

Target Audience and their Problems ◦ Our Solution

Target Audience and their Problems

- Target Audience
  - Curators (museum exhibition organizer)
- Problem
  - no time to glance through every artcrafts
    - similar artcrafts recommendation?
  - might not be familiar with every artcrafts
    - a technology that recognise its chronology according to artstyle

Solution

Museum open data

ML model predicts
Chinese Chronology

user upload the
picture of artcrafts

recommend related
artcrafts

Business Model

Using free app
(limited images upload)

Put commercial ad

Subscribing EduCraft primium
(Unlimited images upload)

NO commercial ad

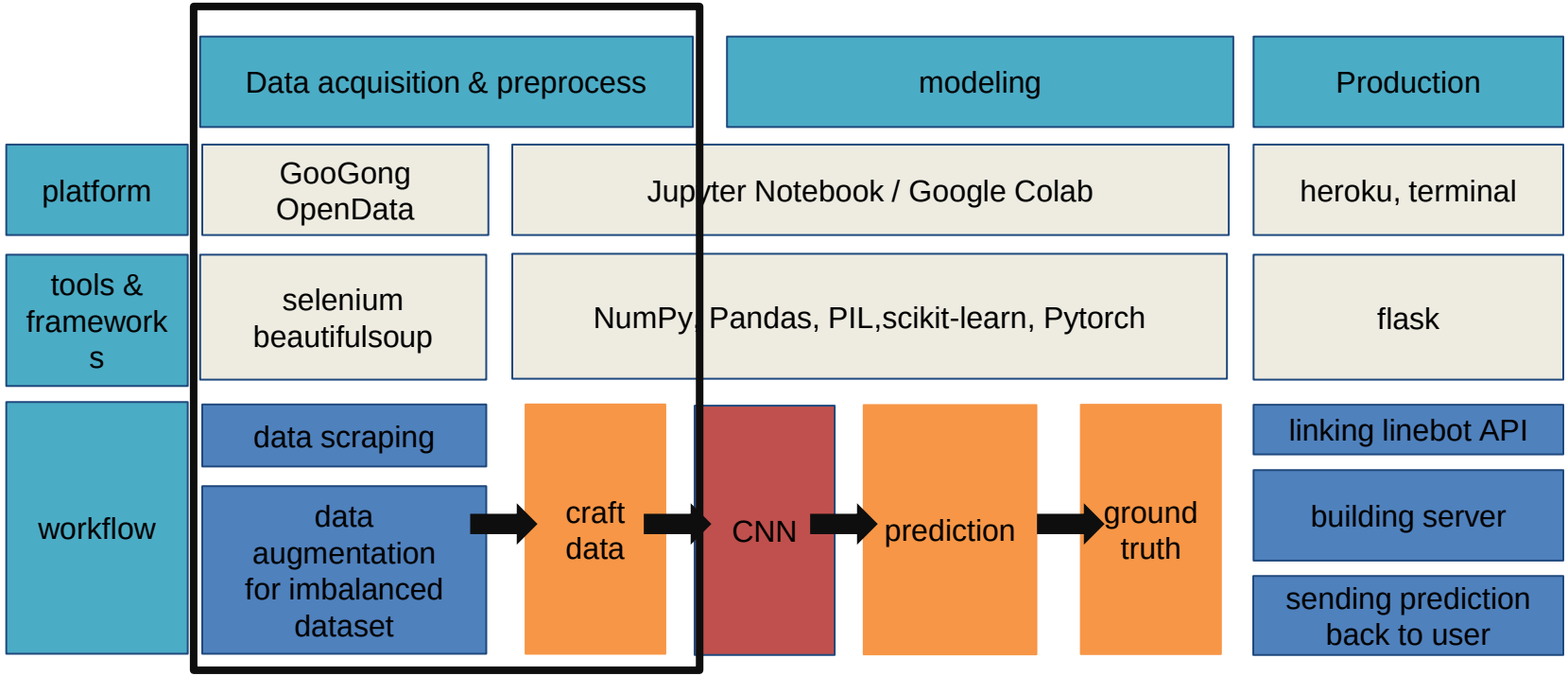
Profit !

03 Technique & Workflow

資料取得與前處理。資料建模。產品平台上架

開發流程

Basic Workflow



Data Scraping

精選圖像下載

依朝代 全部 新石器時代 商 西周 東周 春秋 戰國 秦 漢 西漢 新 東漢 魏晉南北朝 隋 唐 五代十國 宋 北宋 金 南宋 元 明 清 民國 時代不詳

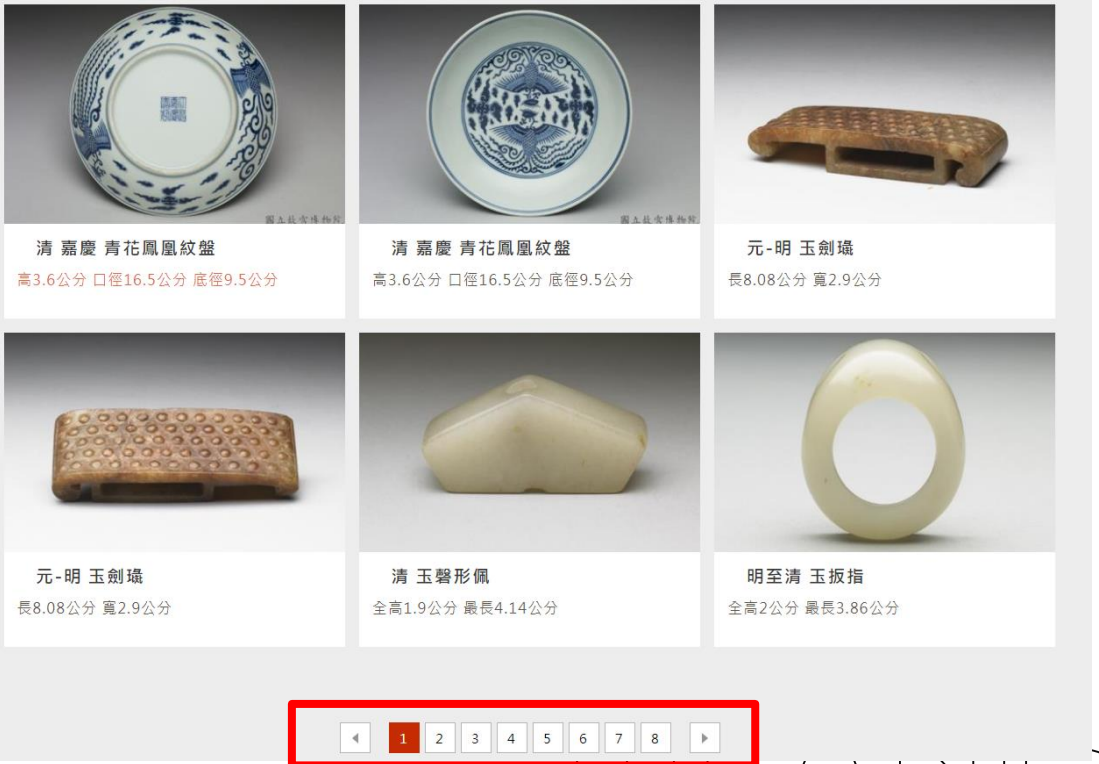
依類別 全部 未分類 (989) 銅器 (2137) 陶瓷器 (5009) 玉器 (3649) 漆器 (263) 琺瑯器 (1232) 雕刻 (355) 文具 (802) 錢幣 (0) 雜項 (1879) 織品 (0) 繪畫 (2890) 法書 (919) 法帖 (190) 絲繡 (154) 成扇 (203) 拓片 (0) 善本書籍 (235) 檔案文獻 (2)

關鍵字 請輸入關鍵字

搜尋

AI AND ART

Data Scraping



AI AND ART

Data Scraping

清 嘉慶 青花鳳凰紋盤

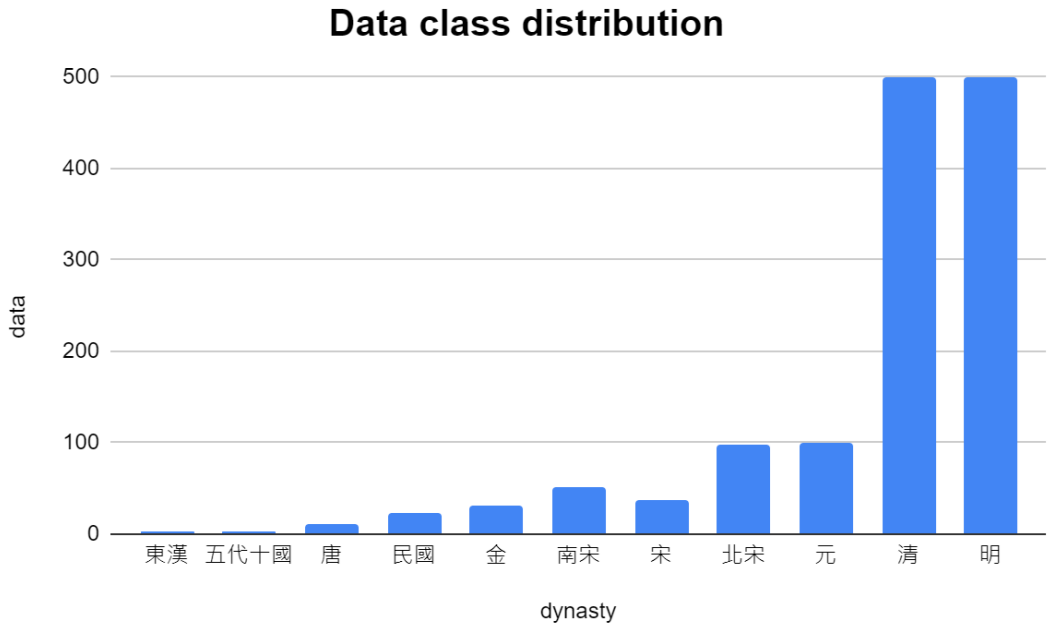
文物圖檔編號：K1B002835N000000000PAD
類別：陶瓷器
典藏尺寸：高3.5公分 口徑16.5公分 底徑9.7公分
功能：盛裝器
質材：礦物/陶瓷/

下載

class=”download-btn”

AI AND ART

Data Class Distribution



Data Preprocessing

1. data labeling -> “dynsty _ number .tif”

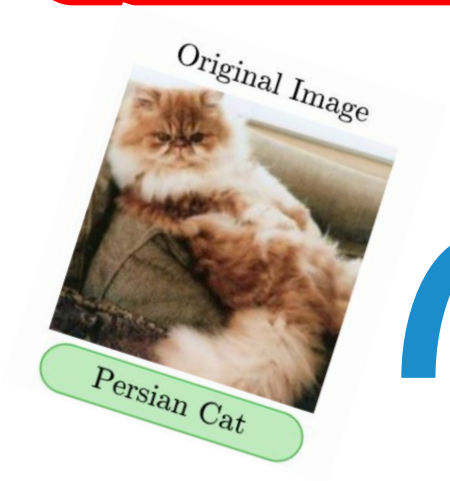
1. data augmentation -> to deal with the data imbalance problem

Data Augmentation

- RandomRotate90
- Flip
- Transpose

+

- GaussNoise



one of

- Sharpen
- Emboss
- RandomBrightnessContrast
- CLAHE

one of

- MotionBlur
- MmedianBlur
- Blur

https://blog.roboflow.com/using-blur-in-computer-vision-preprocessing/

Data Augmentation

https://blog.roboflow.com/using-blur-in-computer-vision-preprocessing/

Data Augmentation

Blur

Toy Poodle

Noise

Chow-chow

Contrast

Persian Cat

https://blog.roboflow.com/using-blur-in-computer-vision-preprocessing/

Data Augmentation

Original

After Augmentation

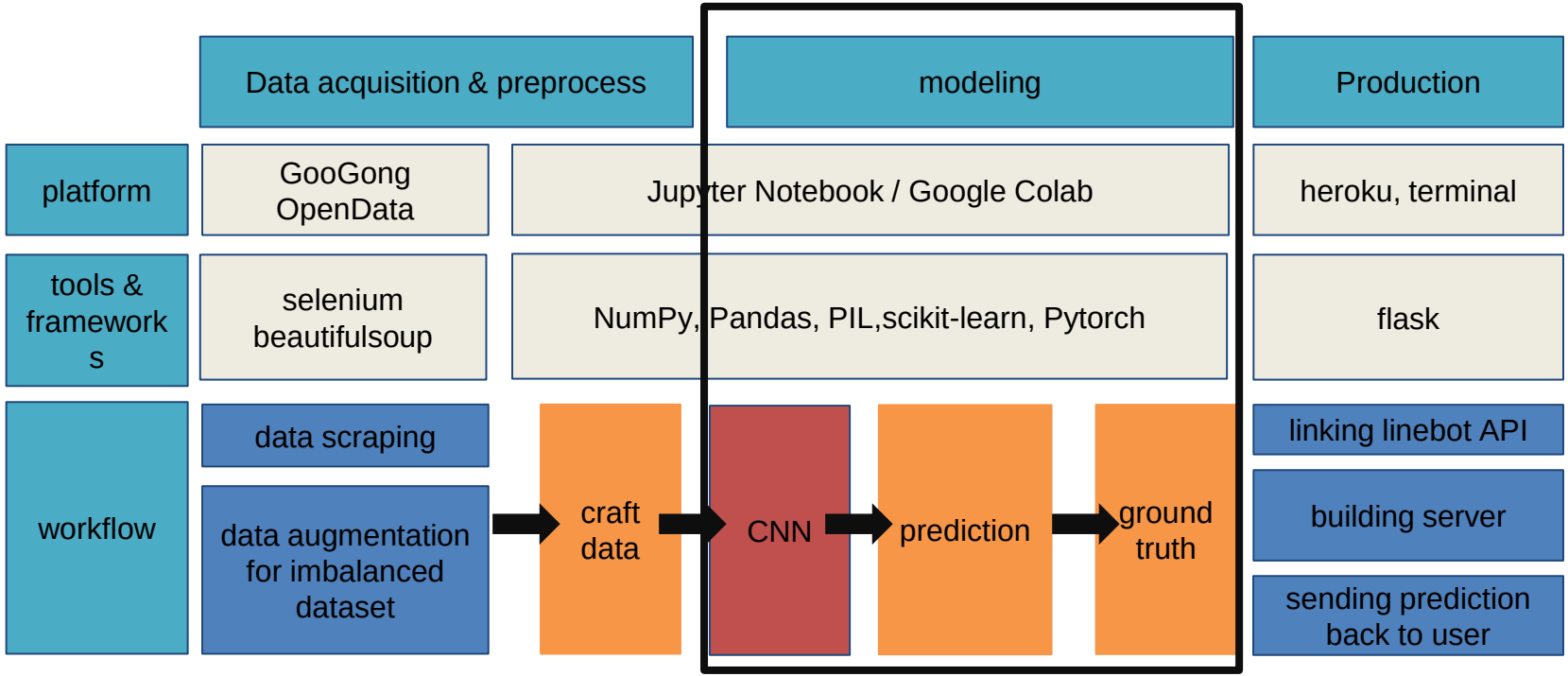
Data Augmentation

Original

After Augmentation

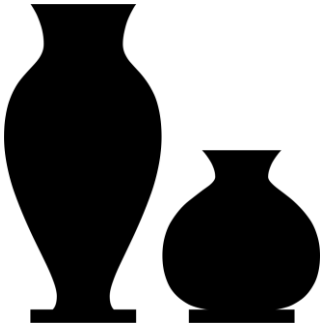
開發流程

Basic Workflow



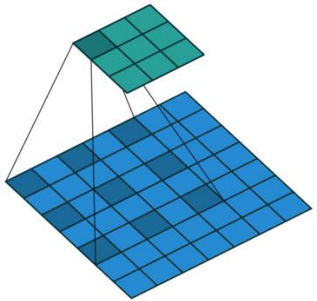
Modeling Process

Input



Photograph of artwork

Model



Algorithm

Output

1. Predicting dynasty.
2. Matching artwork with similar style. (developing)

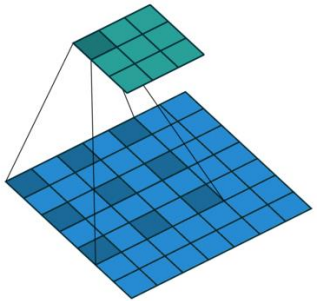
1. Predicting Dynasty Process

Labeled data classified by dynasty

6 dynasties:
-Song Dynasty 宋朝
-Jin Dynasty 金朝
-Yuan Dynasty 元朝
-Ming Dynasty 明朝
-Qing Dynasty 清朝
-Republic of China 民國

training

Model (conv2d)



Applies a 2D convolution over an input signal composed of several input planes.

predicting

Unlabeled data

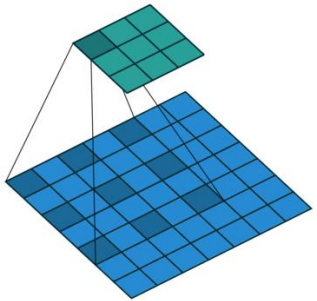
Use the model to predict the dynasty of artwork.

1. Predicting Dynasty Process

Input

Taperstick (ca. 1700–1710)
From THE MET

Model (conv2d)



Applies a 2D convolution over an input signal composed of several input planes.

Output

清朝

Qing

Use the model to predict the dynasty of artwork.

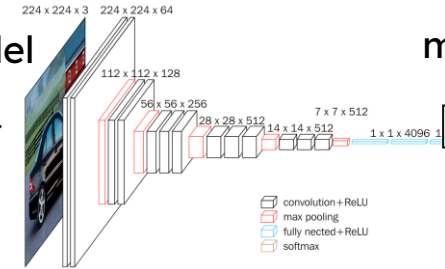
2. Matching Process (Developing)

Labeled data classified by dynasty

6 dynasties:
-Song Dynasty 宋朝
-Jin Dynasty 金朝
-Yuan Dynasty 元朝
-Ming Dynasty 明朝
-Qing Dynasty 清朝
-Republic of China 民國

loading model

Model (VGG16)



Feature extraction.
Reverse Image Search.

matching

Matching Artwork

Use the model to match artwork with similar style.

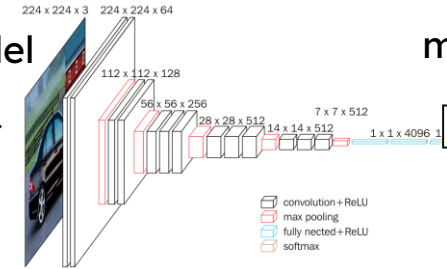
2. Matching Process (Developing)

Input

Taperstick (ca. 1700–1710)
From THE MET

loading model

Model (VGG16)



Feature extraction.
Reverse Image Search.

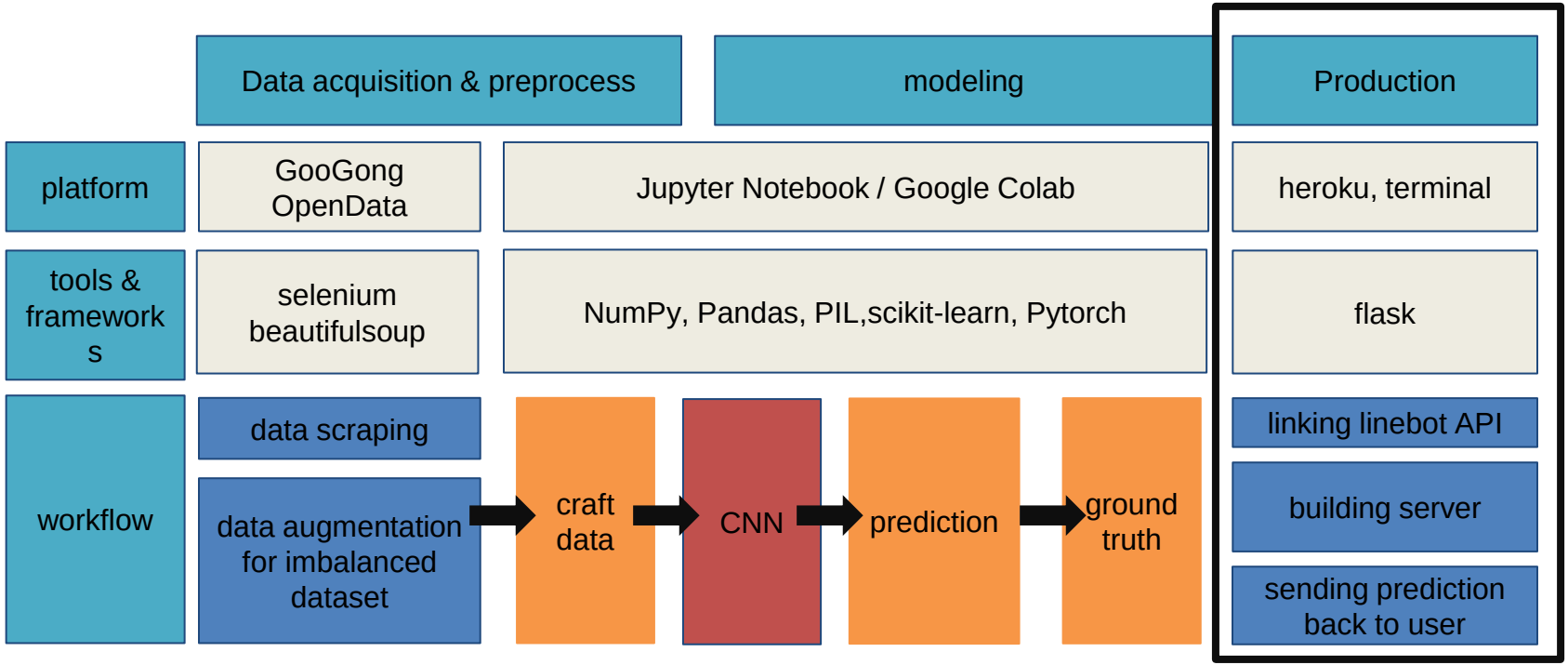
matching

Matching Artwork

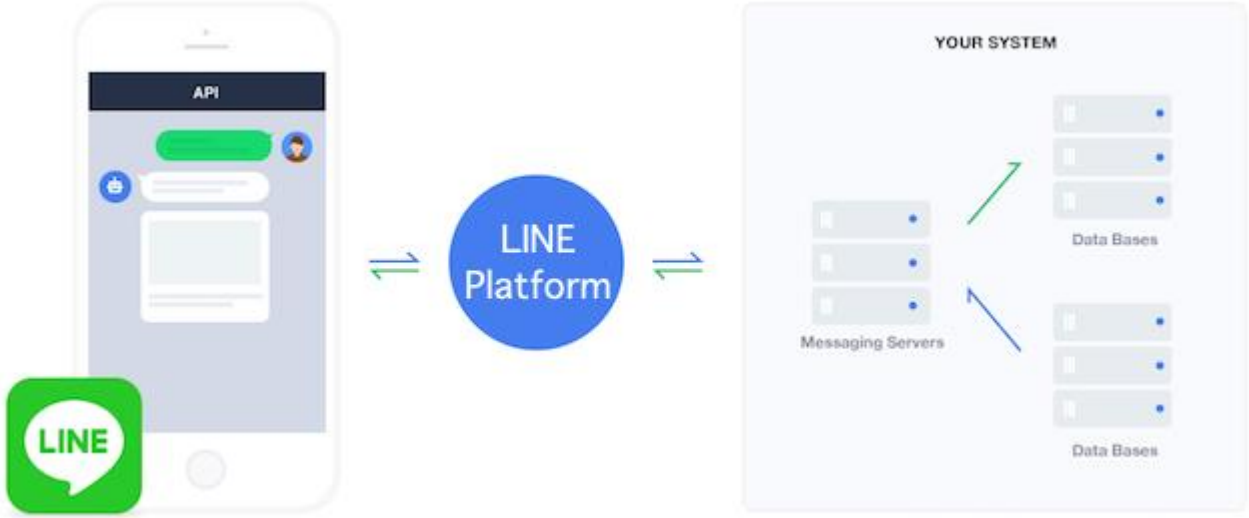
Use the model to match artwork with similar style.

開發流程

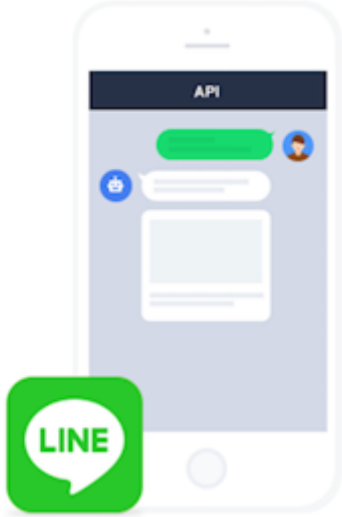
Basic Workflow



Platform Introduction: linebot

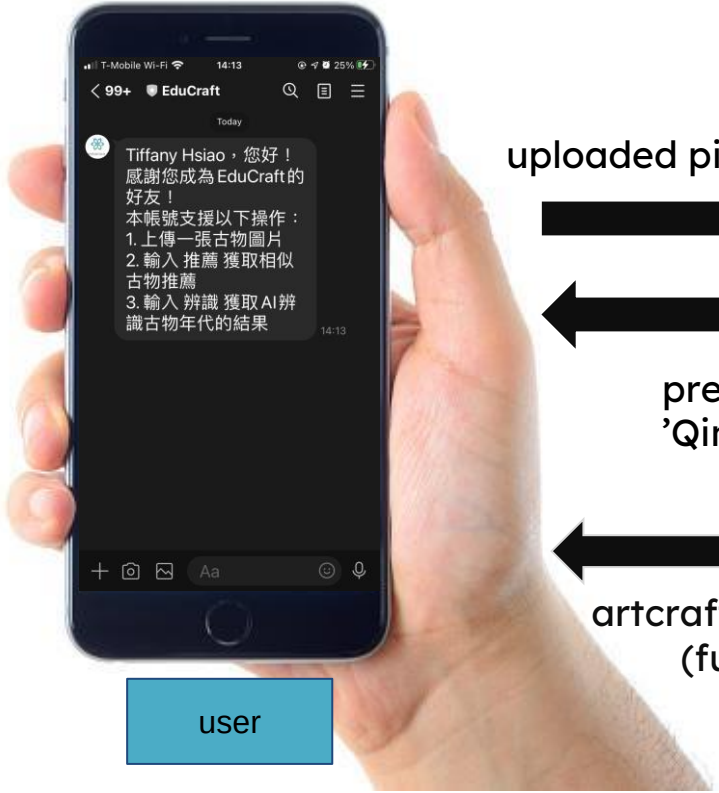


Advantage of the platform



- Developer-Friendly
- Users don’t need to install new extension / apps
- Mobility

Production



user

uploaded picture + text request

prediction
'Qing dynasty '

artcraft recommendation
(future feature)

model.py

server

04 Technology Feasibility

Demo ◦ Future Application

Demo Time

Please look at my phone :)

SOMEONE FAMOUS

Future Application & Improvement

- Reduce model size to increase response speed
- Increase model accuracy
- not only recommend similar artcrafts but also provide the information of that artcraft

SOMEONE FAMOUS

EduCraft’s Core Value

Use AI technology to help museum and related exhibition agency to increase efficiency, promote the museum education for our society

INTRODUCTION

THANK YOU FOR LISTENING

SOMEONE FAMOUS