



Architectural Elements Identifier

Stakeholder pitch



Data set



- Architectural Heritage Elements image dataset
 - Author: Jose Llamas
 - License: Creative Commons Attribution
 - [Download link](#)
- 10253 images
 - 10 categories (altar, aspe, bell tower, column, dome...)
 - 128x128 color



Use Case



- Learn architecture having a guide always with you
- Take a picture and the application will tell you what element it is
- Future features
 - Show explanation about the element scanned
 - Mobile apps
- Audience
 - Schools
 - Institutions (Town halls, museums...)
 - Architects



Architectural Elements Identifier

Classify the architectural element of the image using AI.

Choose image

Predicted: vault

Help us improve. Is it correct? (Note: the image will be saved)

Yes

No





Architectural Elements Identifier

Classify the architectural element of the image using AI.

Choose image

Predicted: flying_buttress

Help us improve. Is it correct? (Note: the image will be saved)

Yes

No

No

altar

apse

bell_tower

column

dome(inner)

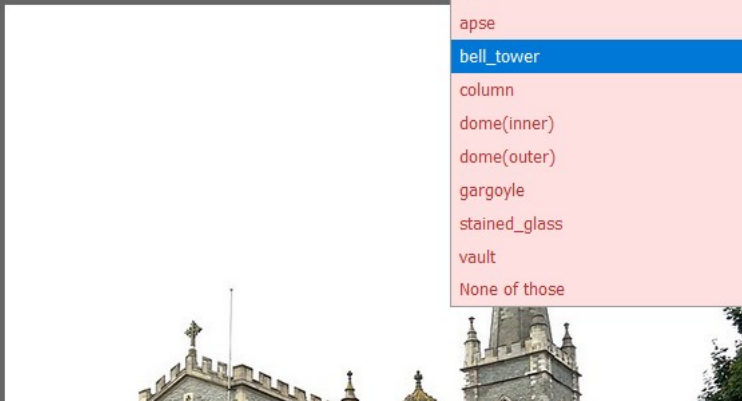
dome(outer)

gargoyle

stained_glass

vault

None of those

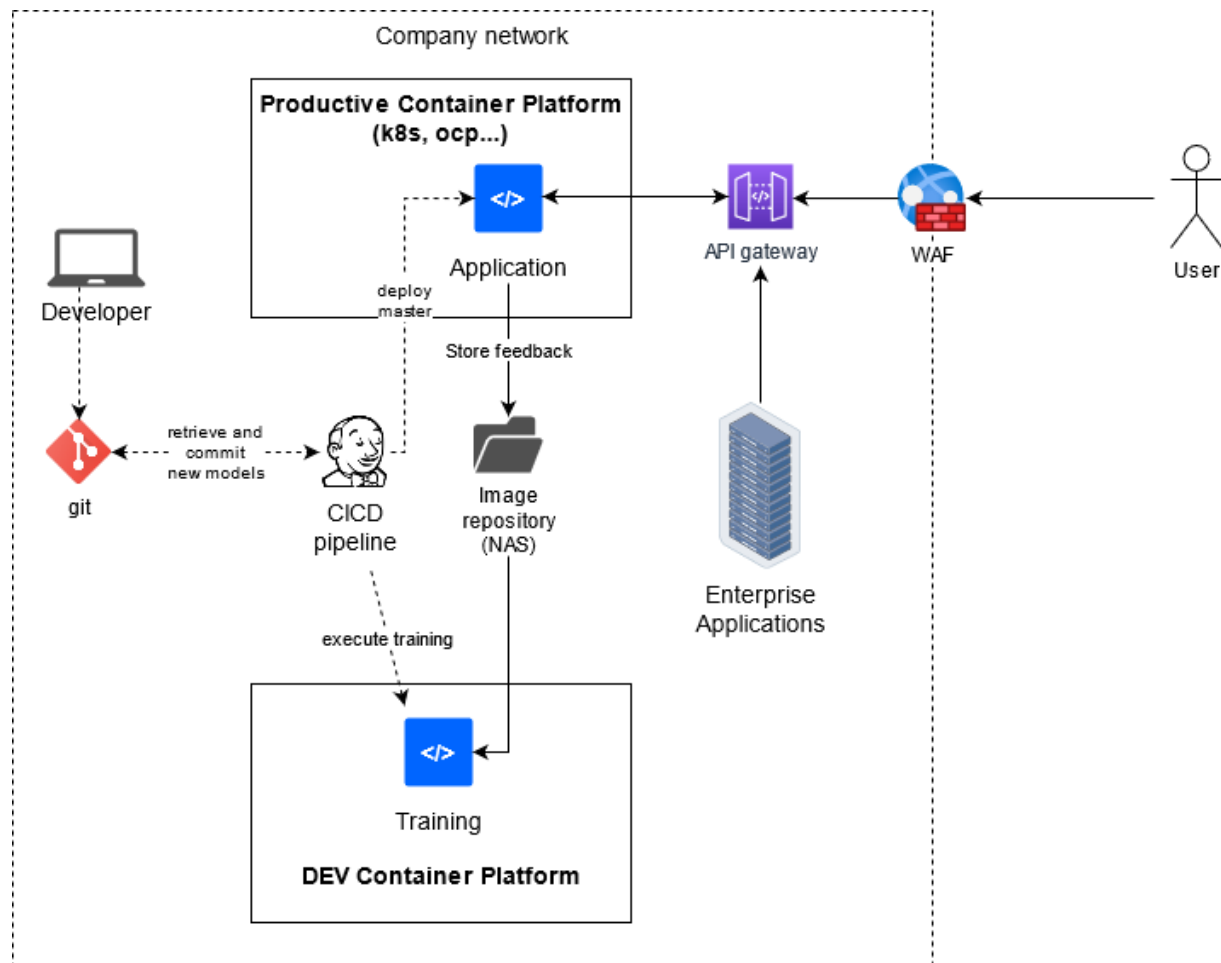




Architectural Elements Identifier

Data scientists pitch

High level architecture



Data Quality assessment

True label: flying_buttress



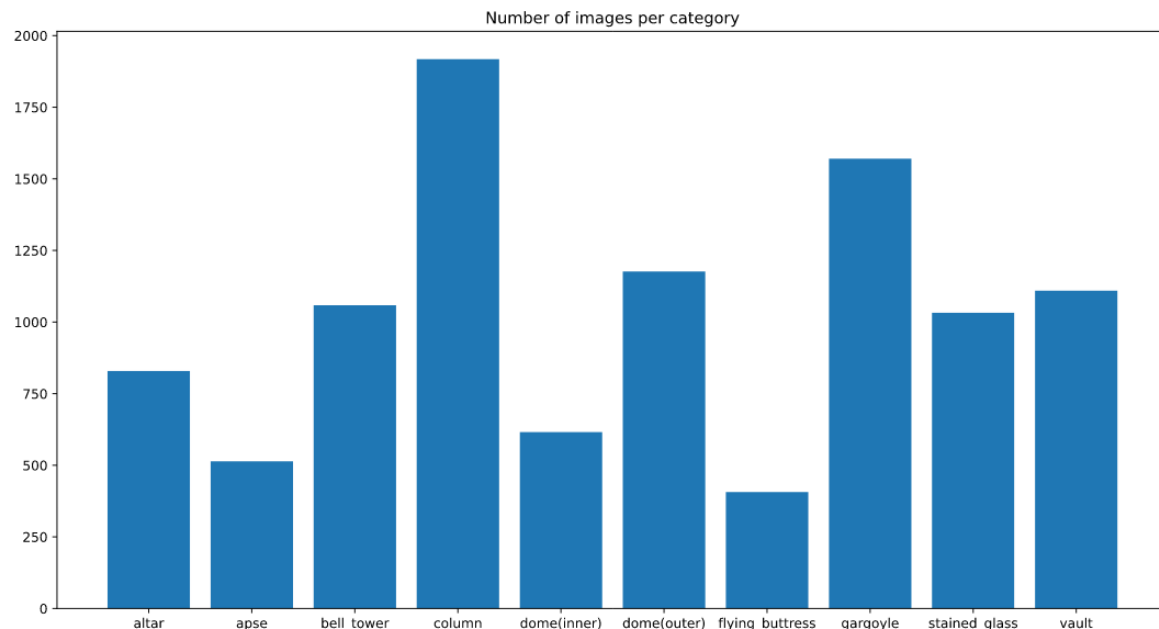
True label: gargoyle



True label: altar

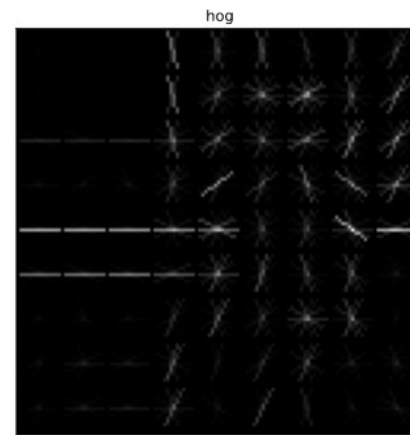


True label: dome(outer)



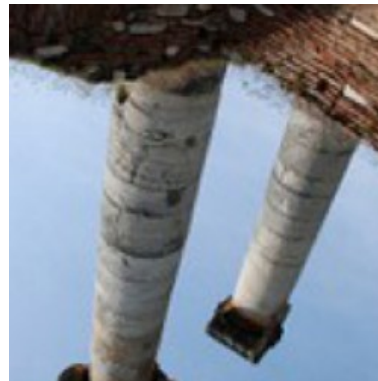
Feature Engineering

- Grayscale
- Histogram of oriented gradients (HOG)



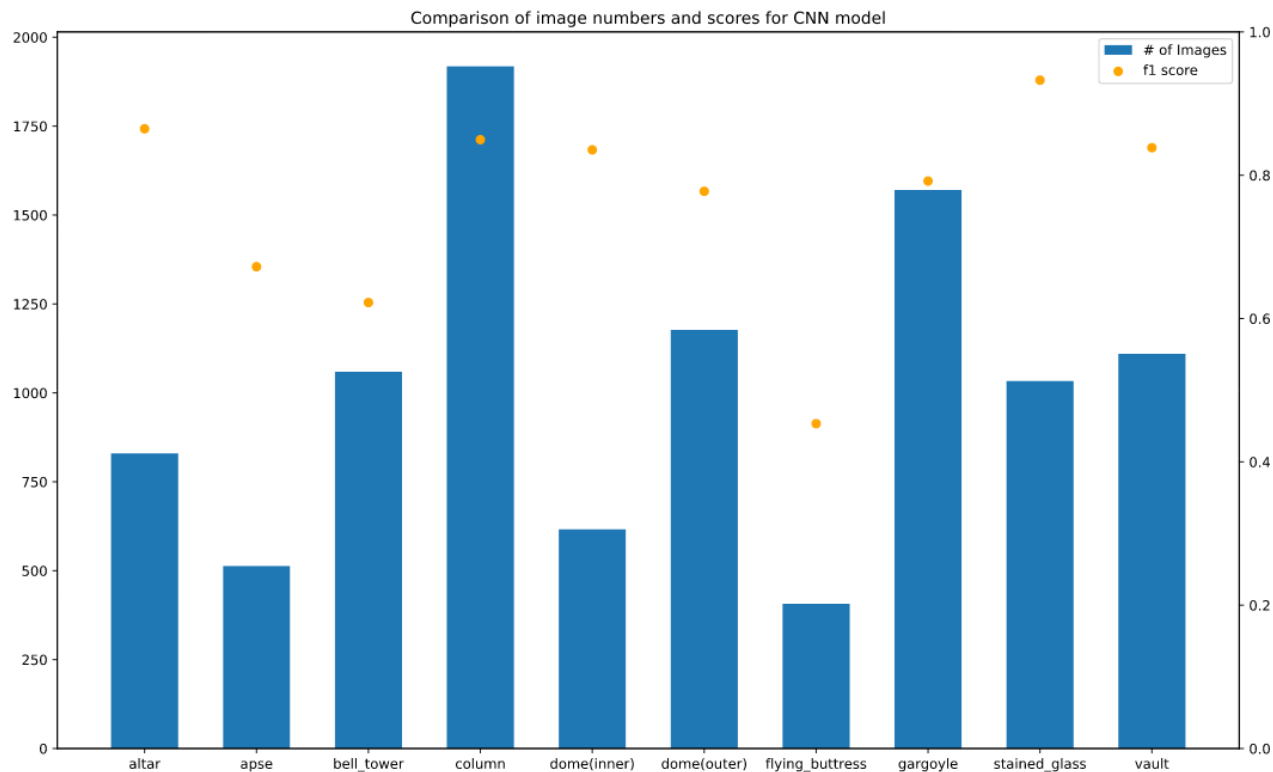
Feature engineering

- Normalization
 - Rescale pixel values from $[0, 255]$ to $[0, 1]$
- Image Augmentation



Models Performance (F1)

- SVM Classifier
 - 0.78
- CNN
 - 0.79
- Mobilenet
 - 0.95



Feature engineering impact ON vs OFF



Feature engineering	SVM (F1)	CNN (F1)
OFF	0.32	0.75
ON	0.78	0.79