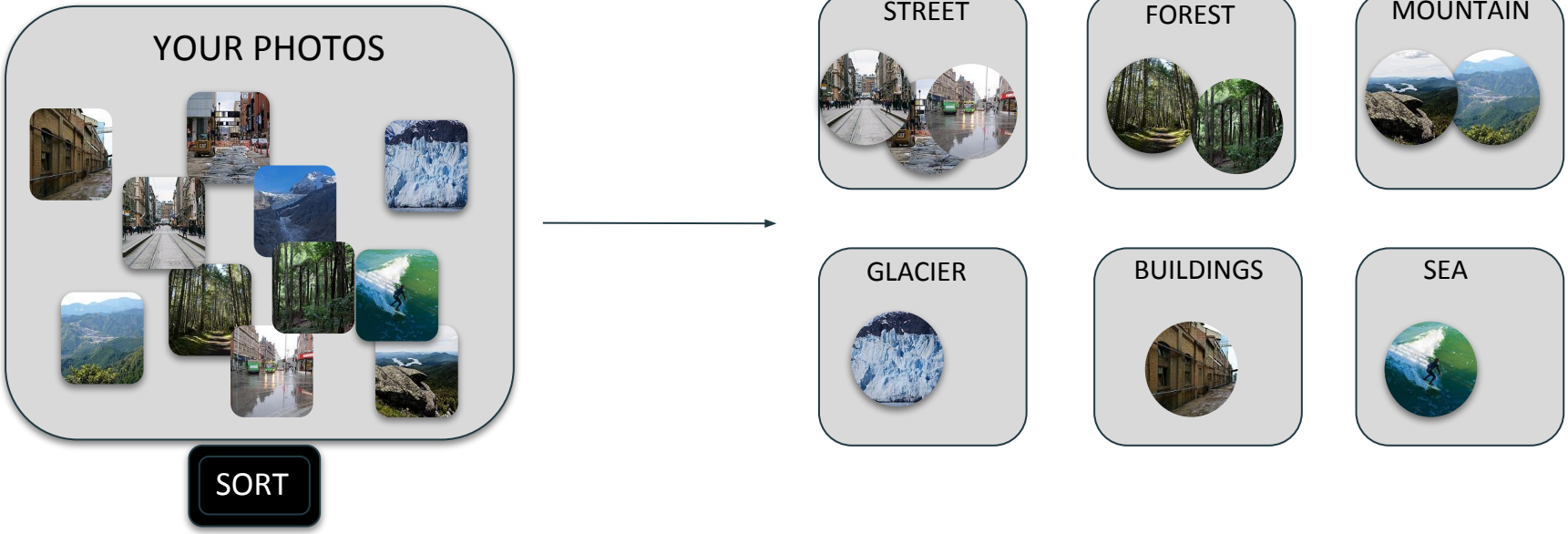
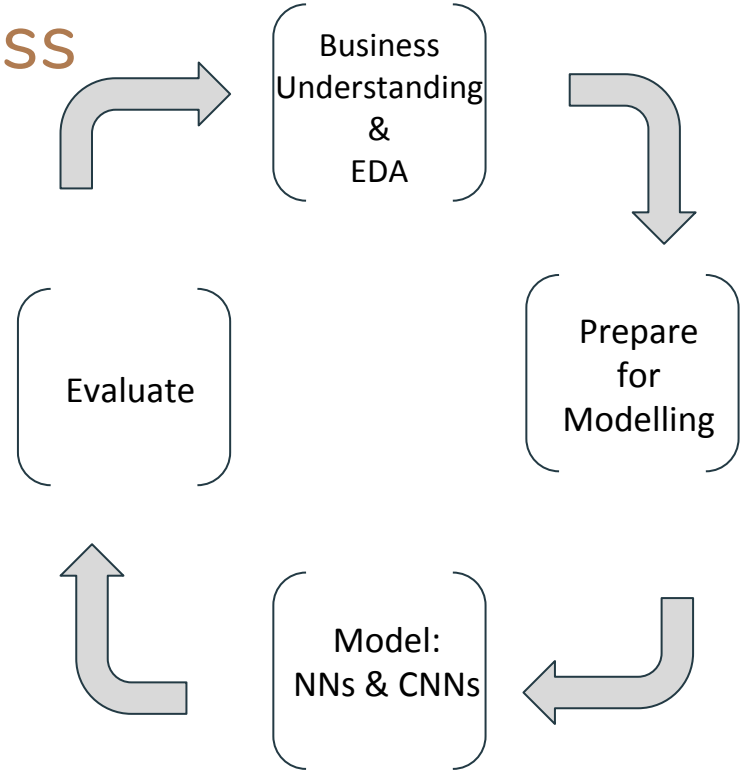
Cene:
An Image Organisation App

By Leana Critchell

What is **Cene?**


YOUR PHOTOS
SORT
STREET
FOREST
MOUNTAIN
GLACIER
BUILDINGS
SEA

The Process


Business Understanding & EDA
Prepare for Modelling
Model: NNs & CNNs
Evaluate

Exploratory Data Analysis

The Data

Data provided by Intel

Collected from Kaggle

24k images of 6 scenes

14k Color training images

Images of size 150 x 150

Even Class Distribution

Building

Forest

Glacier

Mountain

Sea

Street

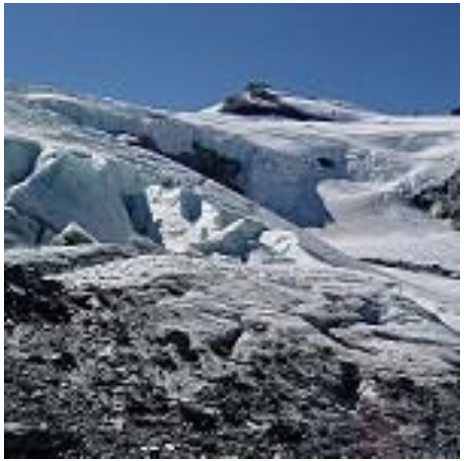
Potential Problem?
Class Similarities

Building or Street?

Street

Building

Glacier or Mountain?



Glacier

Mountain

Metrics

PRIORITY:

MINIMIZE MISCLASSIFICATION

FALSE POSITIVE

(Optimize Precision)

FALSE NEGATIVE

(Optimize Recall)

LEADS TO

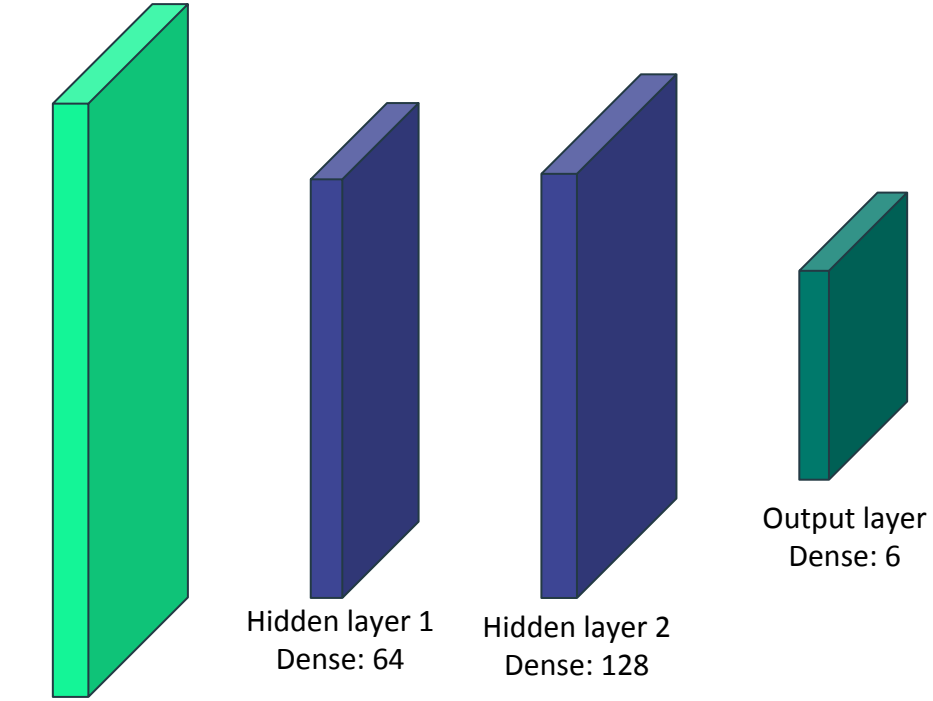
MISCLASSIFICATION

METRIC TO OPTIMIZE:

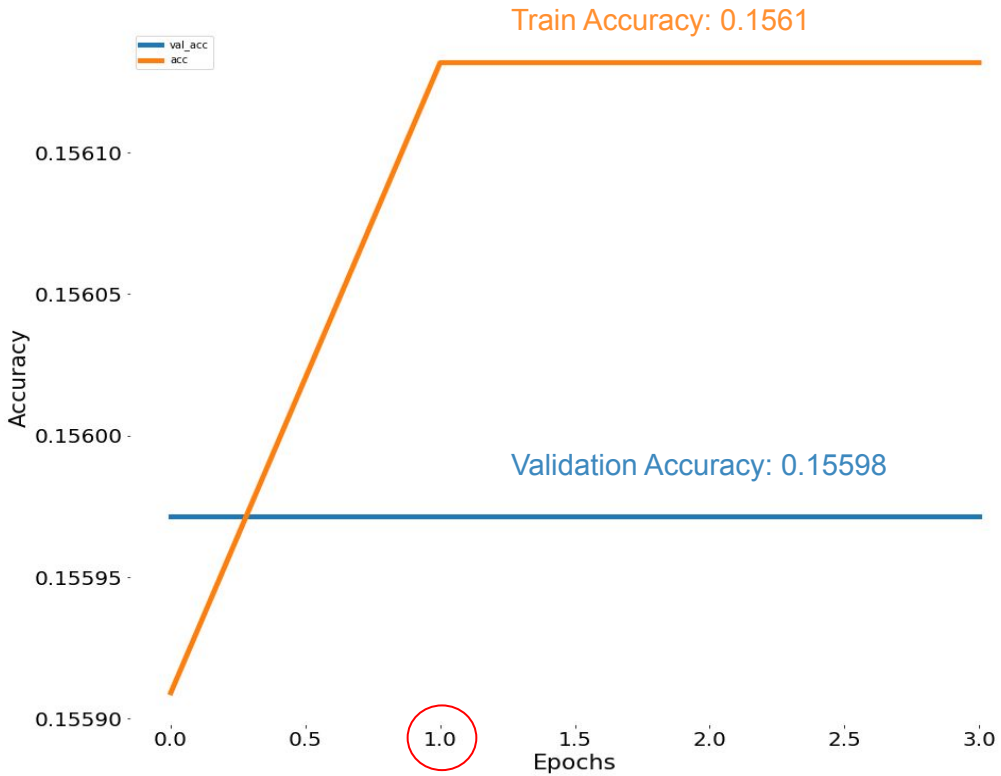
ACCURACY

Modelling: First Simple Model

First Simple Model Architecture



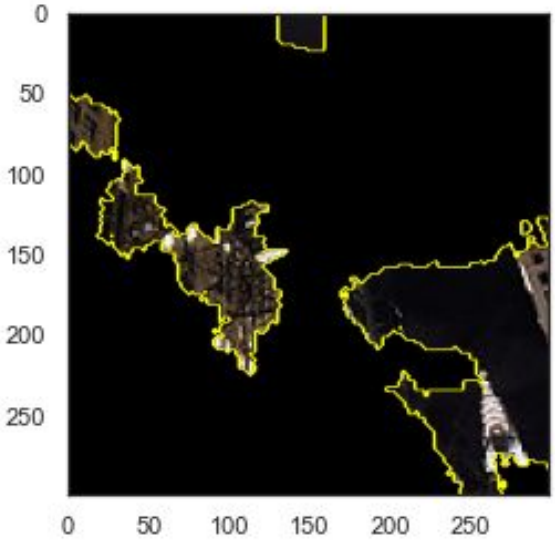
Train vs. Validation Accuracy Score



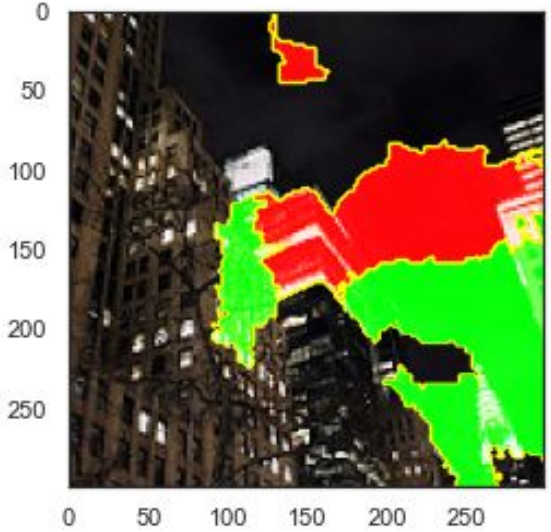
No better than random chance

LIME Visualizations: FSM

Top 5 Superpixels of Building Image

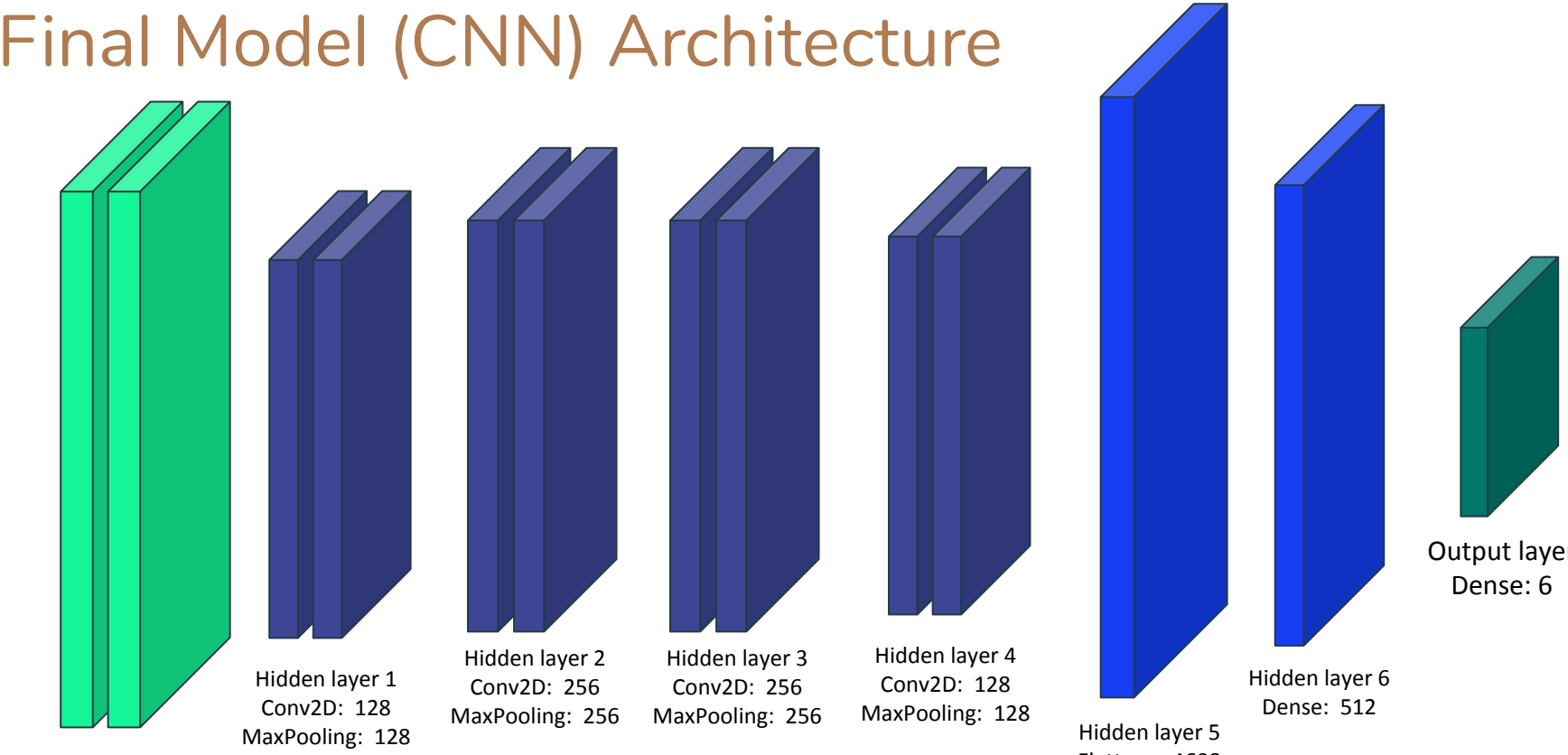


“Pros and Cons”

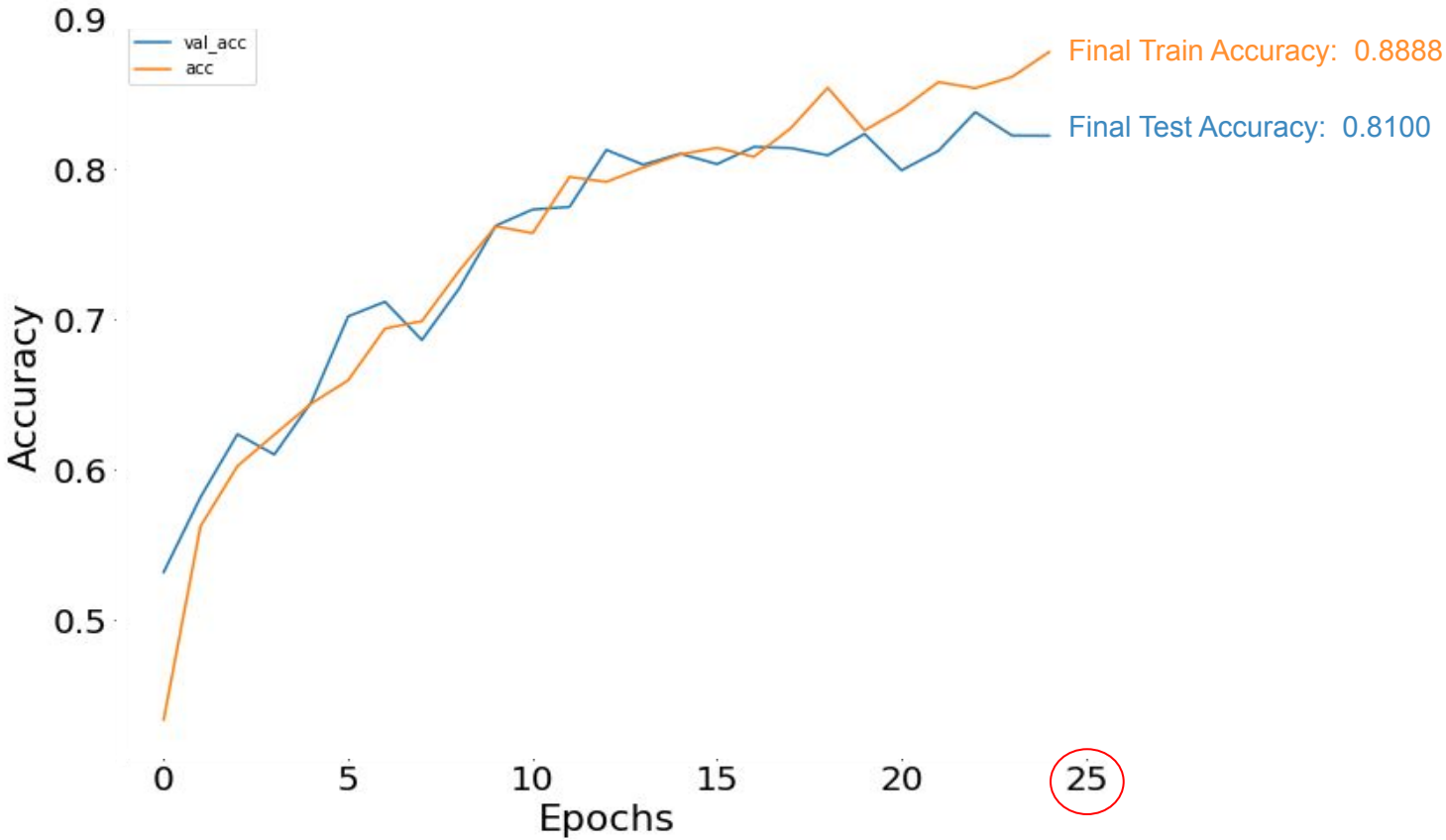


Modelling: Final Model

Final Model (CNN) Architecture



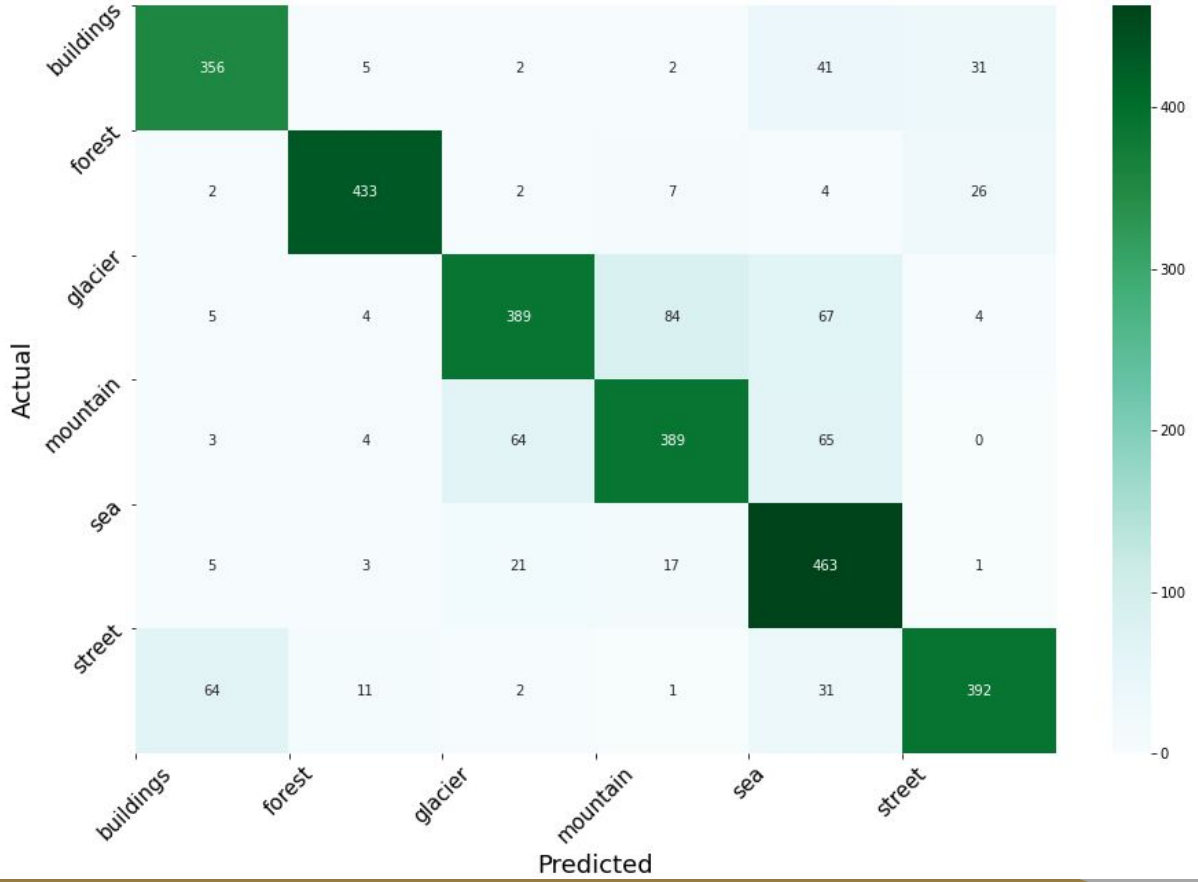
Train vs. Validation Accuracy Score



Final Train Accuracy: 0.8888

Final Test Accuracy: 0.8100

Confusion Matrix: Final Model



Deployment:
Flask App

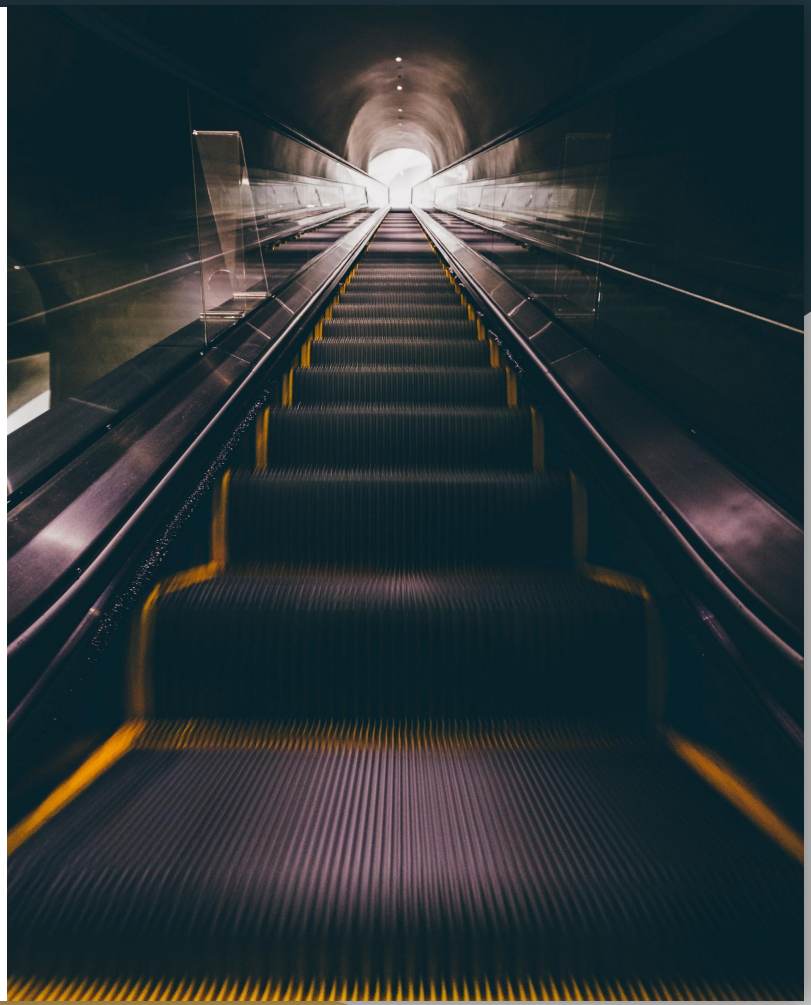
Next Steps

Allow users to upload photos

Combine classes or create subgroups (e.g. mountain & glacier)

Train model on more classes

(Image from pexel)



Contact Info

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Graveyard Slides -
old slides not part of the presentation that I wanted to keep track of:

Introduction - Aims of **Cene**

Optimize Photo organisation

Categorize images from 6 classes

Help user organization

Employ machine learning

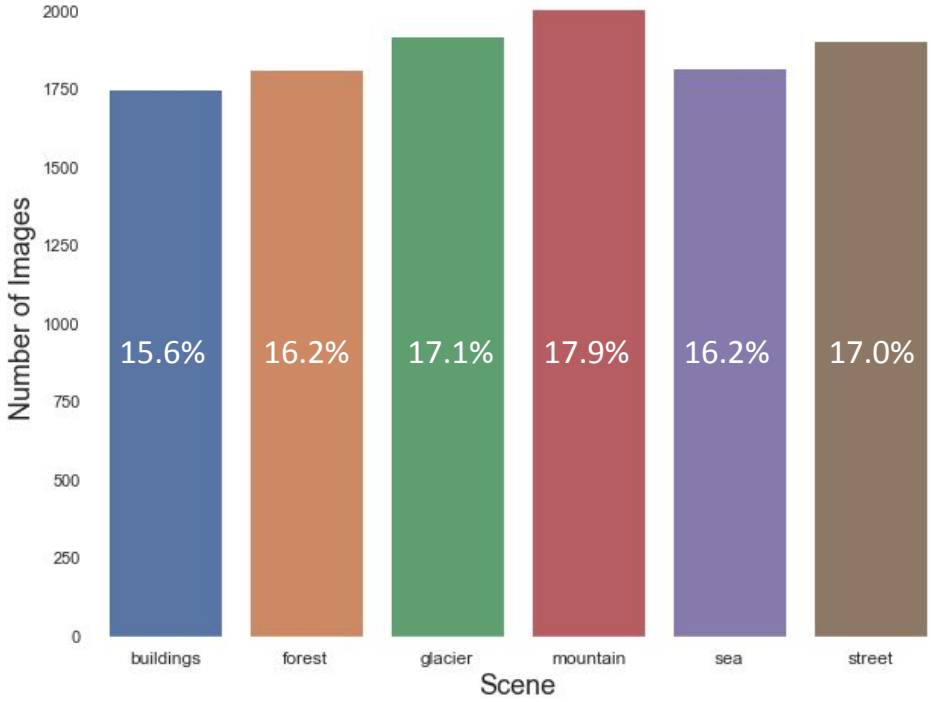
EDA

14k Color training images

256 pixels

Even Class Distribution

Number of Images per Scene
(Training Data)



YOUR PHOTOS











SORT PHOTOS

STREET ALBUM

FOREST ALBUM

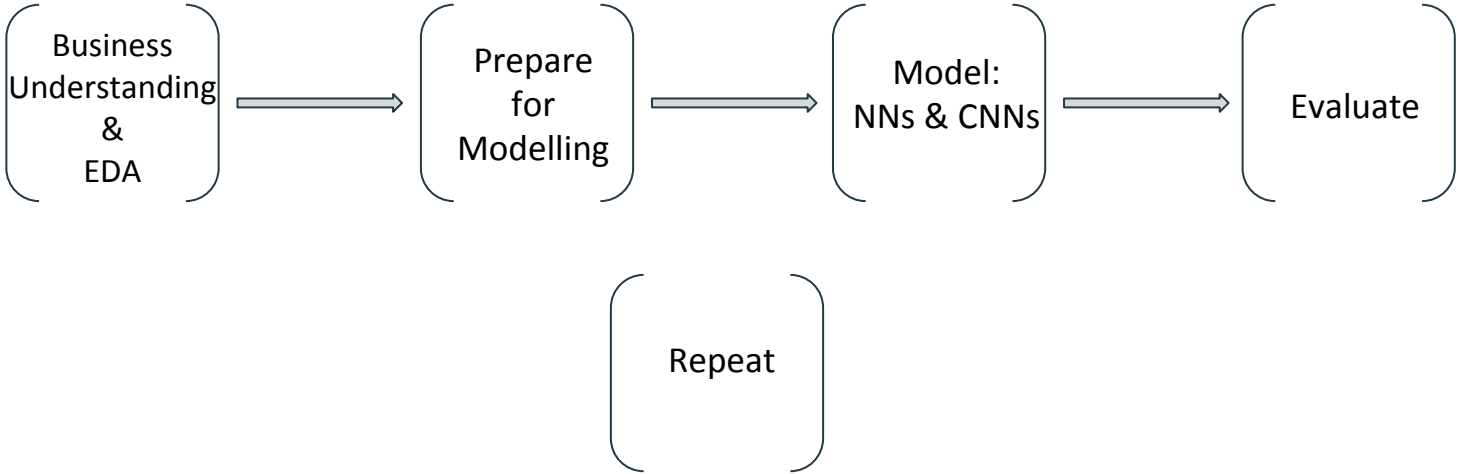
MOUNTAIN ALBUM

GLACIER ALBUM

BUILDING ALBUM

SEA ALBUM

The Process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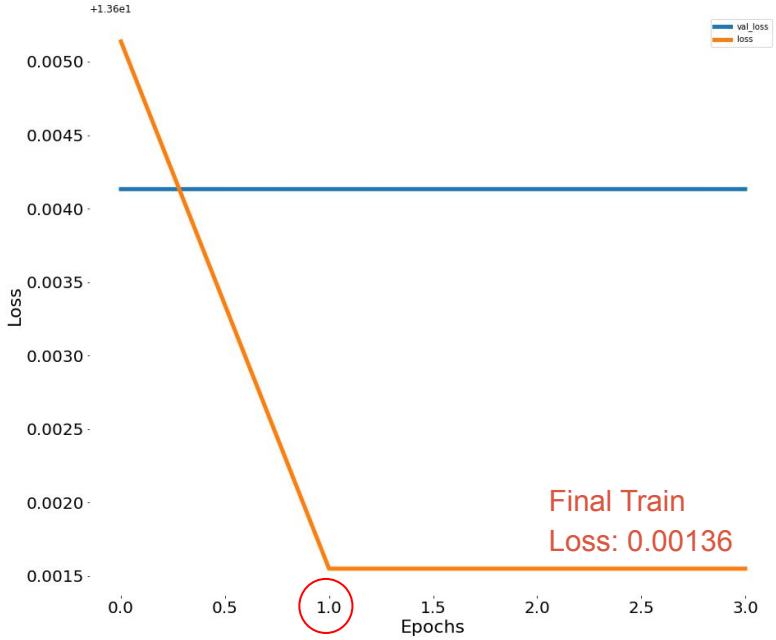
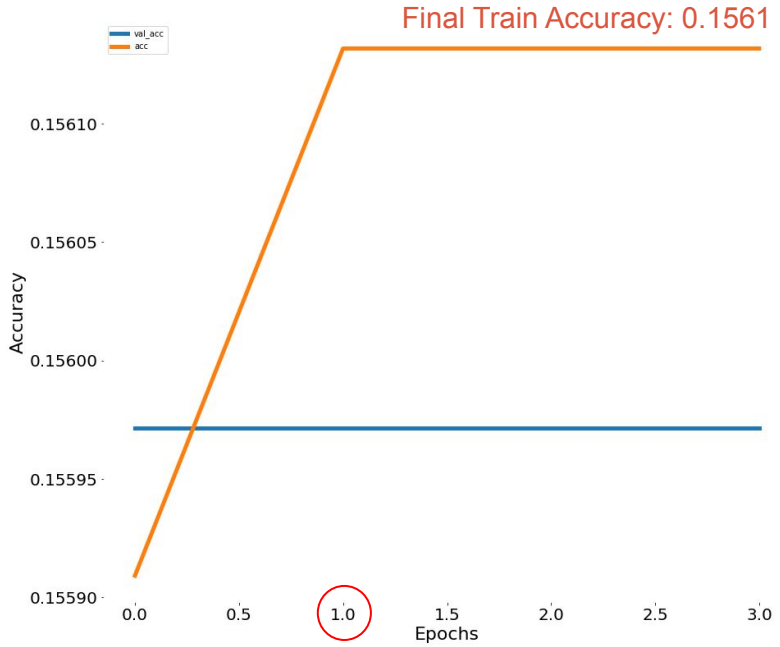
Model: NNs & CNNs
Evaluate
Repeat

FSM: Basic Neural Network

FSM Loss
Train vs. Validation

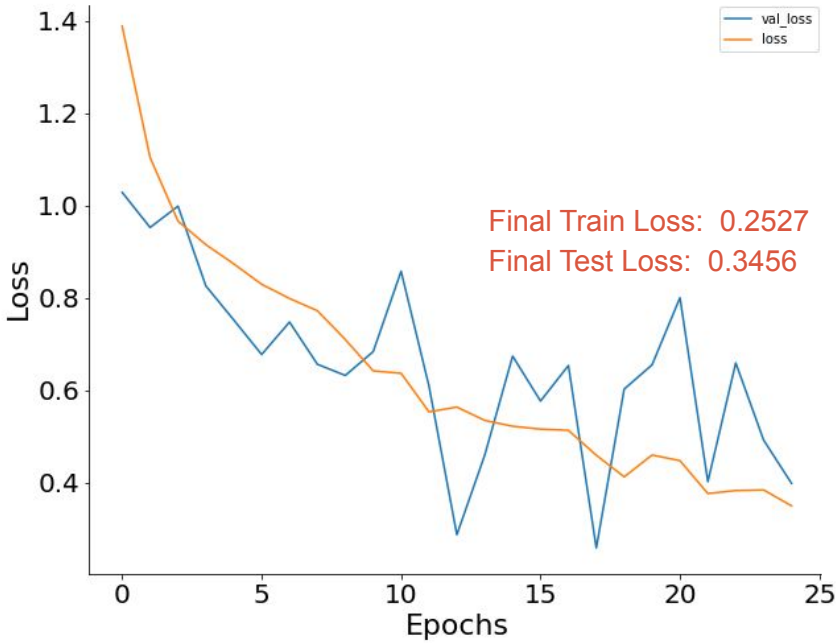


FSM Accuracy
Train vs. Validation

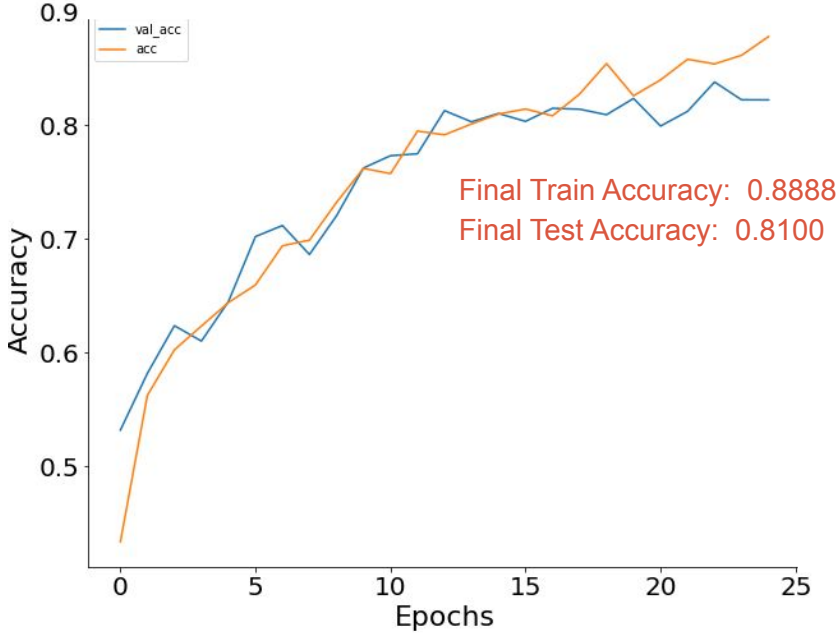


Final Model: Convolutional Neural Network

Final Model Loss
Train vs. Validation



Final Model Accuracy
Train vs. Validation



LIME Visualizations: Final Model

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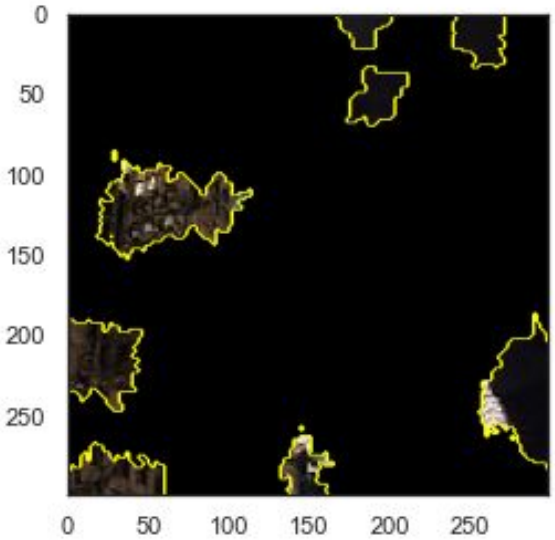

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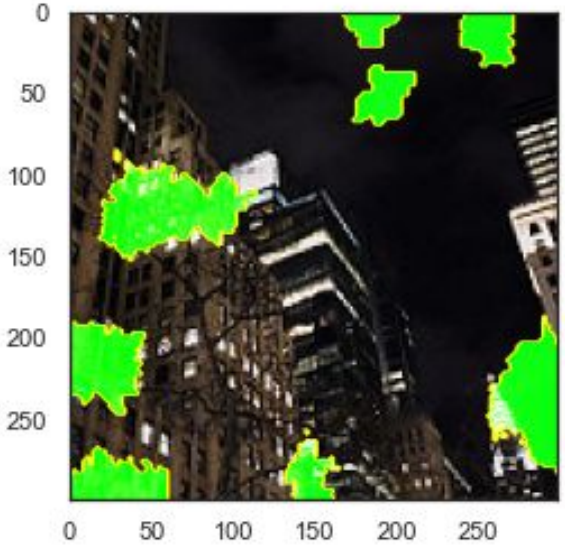
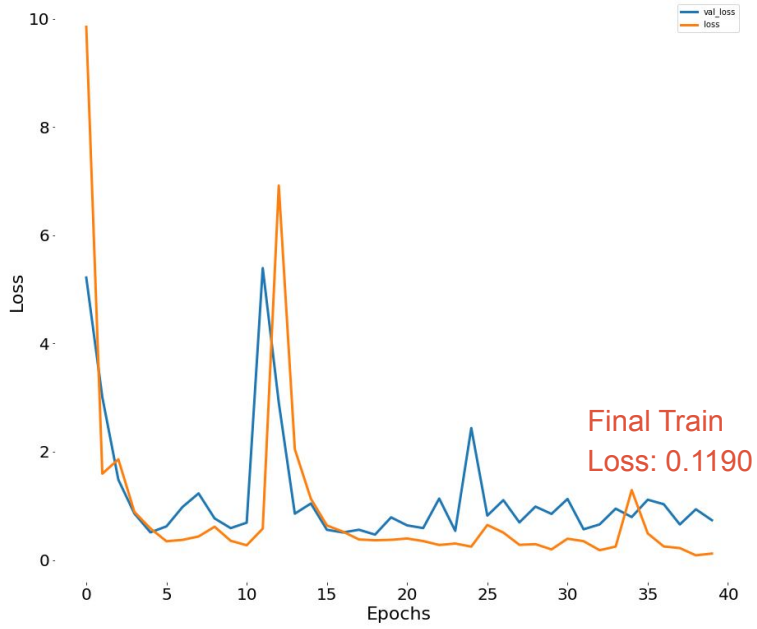


Final Model: Deep Neural Network

Final Model Loss
Train vs. Validation



Final Model Accuracy
Train vs. Validation