Environment recognition from images

using more "traditional" ML techniques

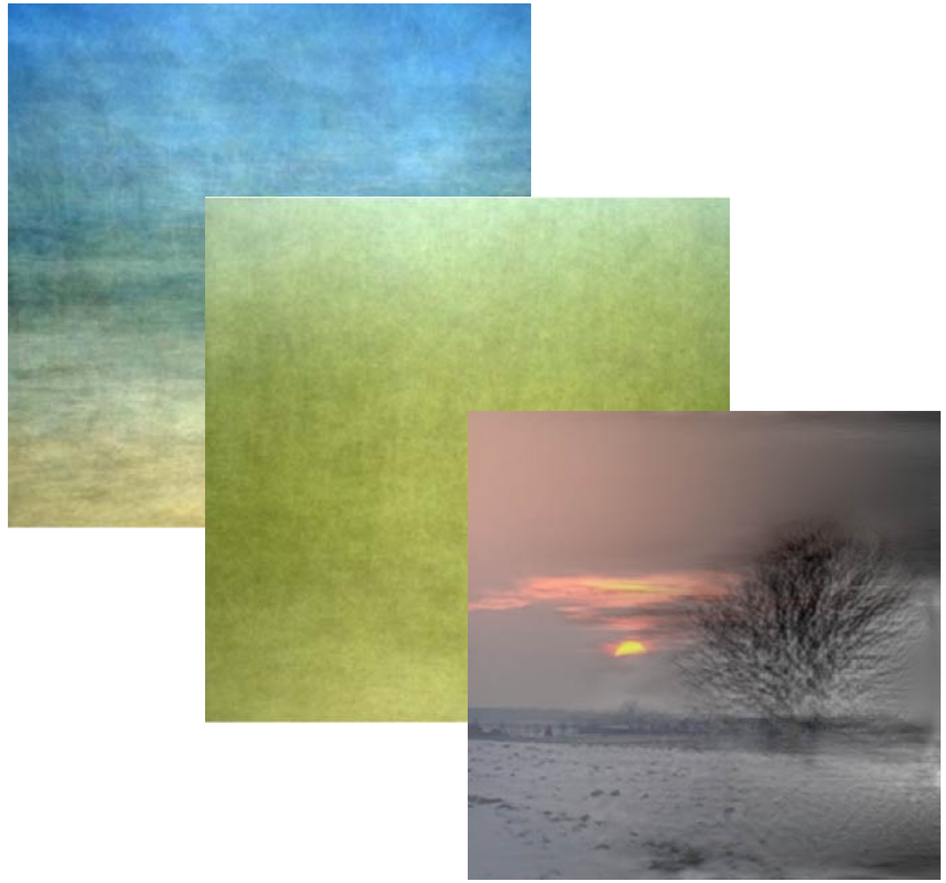
Fundamentals of Data Science - Winter 2021/2022
Final Project

Robin Münk Marco Muscas Aizirek Doronbekova Sowmya Kommineni Lokanathbabu

The dataset

The dataset is from a research paper from Oliva & Torralba (2001)

- 2600 images
- 256x256 pixels (RGB)
- 8 different classes
- Freely available here



Our approach

Environments recognition - our model vs. baseline

The baseline models used a different technique for getting the descriptors

- We are going to try a more traditional approach
- We will be comparing to the baseline
- While trying different methods at each step

The model

Using traditional machine learning techniques

- **FEATURE EXTRACTION:** SURF, SIFT, RGB, HSV histograms
- **FEATURE MAPPING:** K-Means to Bag of Visual Words
- **CLASSIFICATION:** LOGISTIC REGRESSION, SVM

Evaluation of the model

Standard metrics and comparison

METRICS

- Accuracy
- Confusion matrix

COMPARISON WITH THE BASELINE

- Performance
- Training time

The baseline accuracy is 83%

Thank you for your attention!