Onboard AI

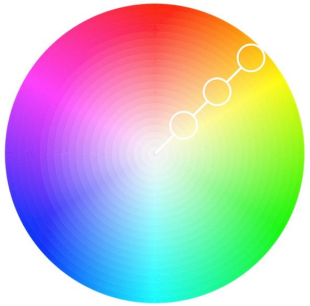
Colours

Task

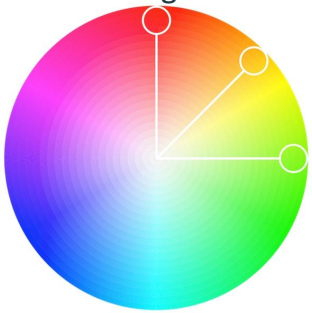
Extract the colour palette of a website, grouping colours based on semantic purpose

Anatomy of a Colour Palette

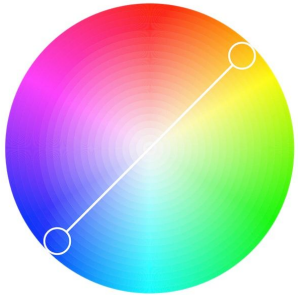
Monochromatic

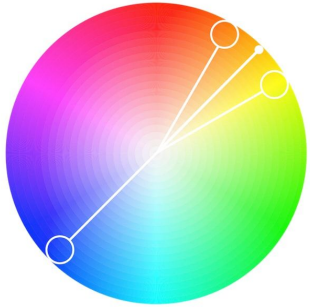


Analogous



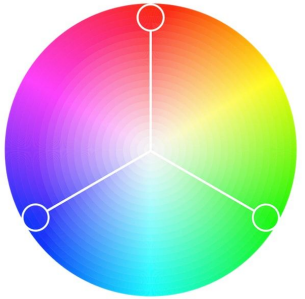
Complementary





Split-Complementary

In general, a colour palette can be classified into one of five classes



Polygonal

The Model

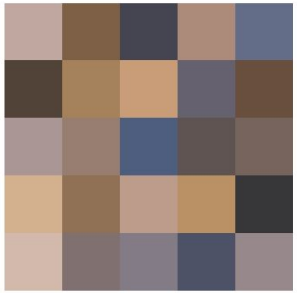
- The model will be a bi-directional transformer
  - Can see the entire colour palette at once
  - Can handle arbitrary lengths of palette
  - Without position embeddings there is no inductive bias towards relative order
- The model performs two tasks
  1. Classifying the palette as one of the previously mentioned classes
  2. Clustering the colours based on their overall purpose within the palette

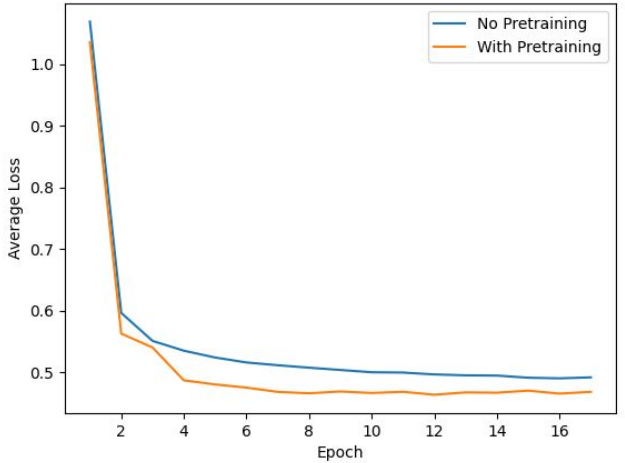
Training with Synthetic Data

- Training on artificially generated data can be convenient
  - No issues with dataset size
  - Can control quality
- However, any discrepancy between the synthetic distribution and real world data can decrease your model's generalization
  - This typically comes in the form of overfitting

Pretraining on Real World Data

- Training from synthetic data can often lead to collapse in a local minimum
- To resolve this, the model was first trained using Sim-CLR on colour palettes sourced from existing VeryConnect customers + the open source WikiArt dataset





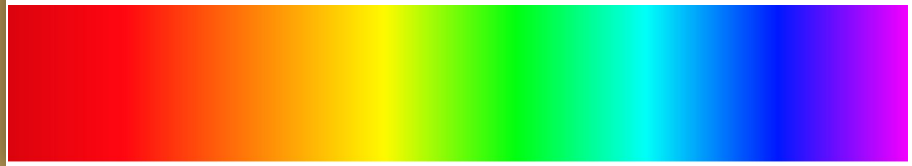
* These loss curves are from quite early in the data generation / hyper parameter tuning process

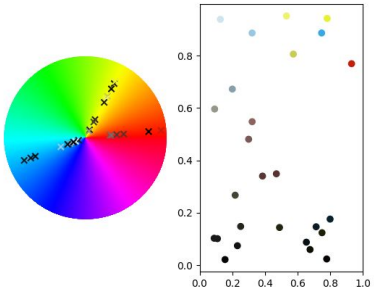
Random Transforms and LAB

When generating a colour palette for training, first an “idealised” colour palette is generated belonging to a random class. Next, random transforms are performed.

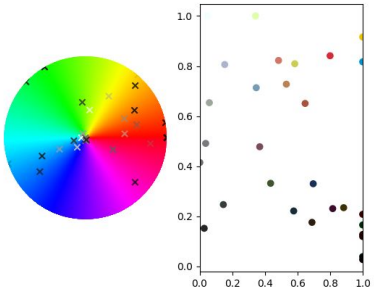
Importantly, these transforms shouldn’t change the palette’s class. Humans perceive colour in a non-uniform way which standard colour spaces (e.g. RGB) don’t account for.

LAB does.





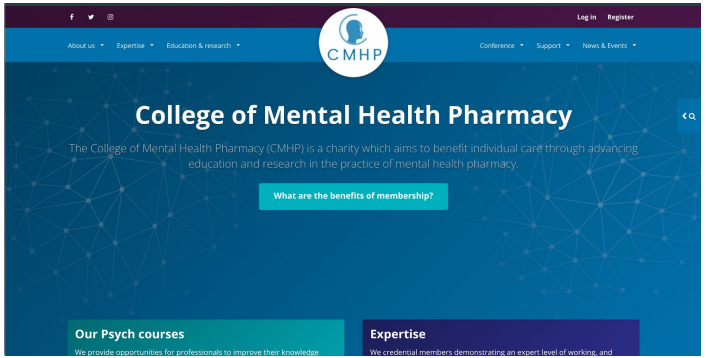
“Idealised”
split-complementary palette



After LAB space transforms

Results

Using clusters to analyse a https://www.cmhp.org.uk/



Analogous

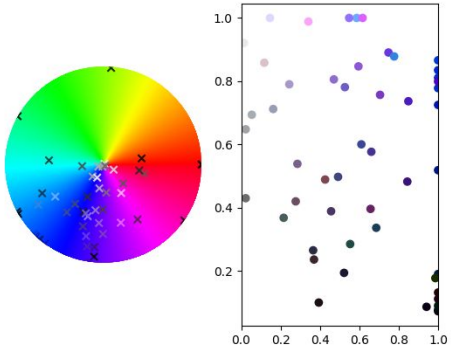
primary: #832780

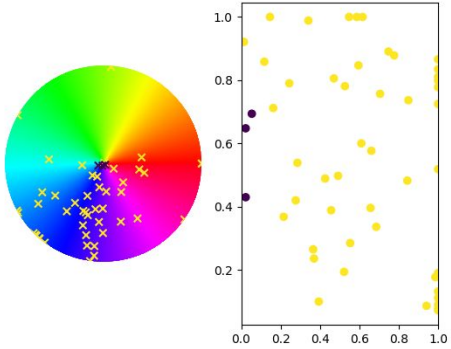
secondary: #003f60

tertiary: #23236b

Synthetic Data

Prediction: Monochromatic





Logos

Task

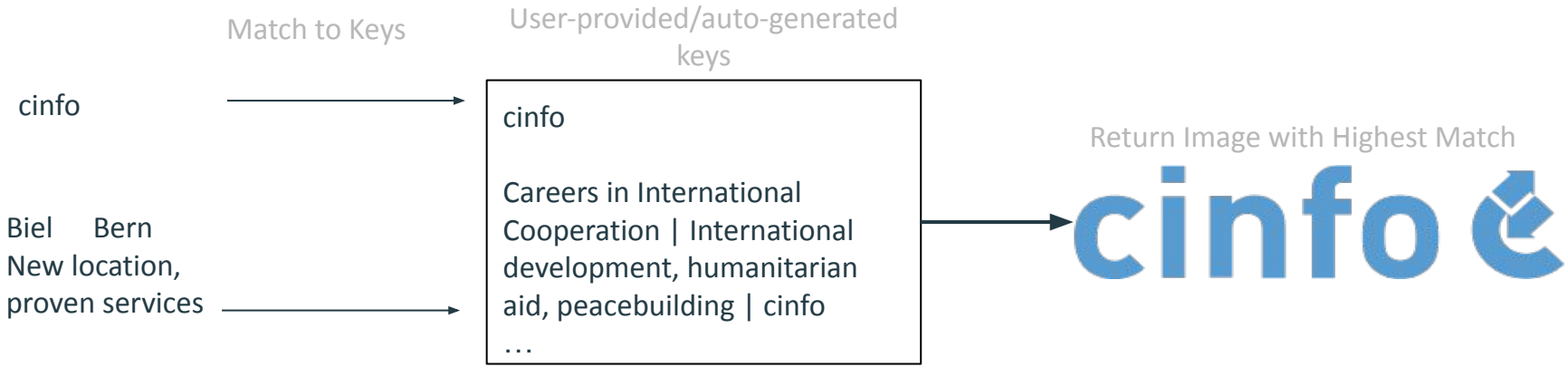
Extract the company logo from a website

cinfo

Biel Bern
New location,
proven services

Approach One: OCR + Fuzzy String Similarity

Tesseract OCR



Approach One: OCR + Fuzzy String Similarity

80+% accuracy on VeryConnect Customers

Approach Two: A Bespoke Model

Data Gathering

The Part of AI Everyone Tries to Avoid

Using a set of 1,391 companies, we set up a site to manually label logo images sourced from their homepages along with a set of google search results

The Model

1. A vision model (potentially pre-trained on a publicly available logo dataset produces a latent vector for each image
2. A transformer processes these vectors (with additional metadata), selecting the logos from them

Results

- Due to the time-consuming nature of the data gathering process, along with challenges and time pressures from other parts of the project, we were only able to gather around 100 training examples
- Top-1 accuracy on an unseen portion of the dataset: 64%
- This number may be higher with a larger dataset, but the trade off in time dedication may not be worth it