**IU0001333 AI for Media** Proposal @*YIFAN FENG*

**AIM**

My project is inspired by [AImoji: AI-generated Emoji](https://process.studio/works/aimoji-ai-generated-emoji/) which explores and enriches an international visual language to communicate human emotions. Taken from its core value of “universality”, my project aims to create new shared identity through producing one popular cultural reference – country & territory flags as a case study. The technical component compares and contrasts two Generative Models: DCGAN and ProGAN to produce different styles of AI flags based on the given dataset. Overall, a total of 270 jpeg images (250 \* 250 \* 3) will firstly be upsized to (256 \* 256 \* 3) and put into training process. The final products are documentation of programming scripts, a description of model evaluation, and an outcome interpretation (in .gif or .mp4 format).

**TOOLS AND FRAMEWORK**

Dataset: <https://www.countryflags.com/>

Framework: [Deep Convolutional GAN (DCGAN)](https://paperswithcode.com/method/dcgan) or [ProGAN](https://paperswithcode.com/method/progan)

Programming Environment: python 3.9, including libraries TensorFlow, Keras, Numpy, PIL.Image, Os, CV2 (and more upon requirement)

**PLANNING AND FEASIBILITY**

The coding script is divided into three parts: data preprocessing, model training and result presentation. Below is the general planning of this project.

1. Preprocessing: Within a for loop, iterate each image and
   1. resize every file to 256 \* 256 pixels with 3 dimensions (RGB)
   2. rescale each image from RGB 0-255 to 0-1
   3. add a data augmentation layer as the training set is relatively small
2. Model 1: DCGAN
   1. Build a discriminator
   2. Build a generator
   3. Compile DCGAN
   4. Define a new function: save\_data
3. Model 2: ProGAN
   1. Downsize image to 128 \* 128 \*3 to match the requirement from pretrained model: ProGAN-128
   2. Load new dataset into ProGAN-128
   3. Define a new function: save\_data

References:

* AI4M week 2.1 Neural Network notebook
* AI4M week 2.2 Transfer Learning
* AI4M week 5.1 DCGAN notebook
* AI4M week 5.2 ProGAN notebook