

# Assignment 5 - Intelligent Systems

May 8th, 2023

## 1 Assignment Statement

**Points: 10**

You are a data scientist working for Apple. Your task consists on creating a prediction model that receives a photography and it classifies it as:

- Building
- Forest
- Glacier
- Mountain
- Sea
- Street

This model will be used by the developers team in the search bar of the iPhones, when a customer wants to filter all the photos from his/her gallery that contain one of these elements.

### 1.1 Tasks

- Download the dataset from [here](#). It is categorized in three files: `seg_test` that will be used for testing your model, `seg_train` that will be used for training your models, and `seg_pred` that will be used for validating your model.
- Do some pre-processing to the images before starting to train the model.
- Create a model using Convolutional Neural Networks to predict an image as one of the classes.
- Plot the `val_loss`, `loss`, `val_acc`, and `acc` for each epoch to see how the CNN is been trained.
- Visualize one intermediate activation for one or more layers to see intermediate image results (see [this](#)).
- Save your trained model as `.pkl` file and re use it for predicting the class of new images in a new application.

## 2 About the Assignment

1. Group of max. 3 people

2. Deadline: May 17th, 23:59
3. The assignment must be delivered within a jupyter notebook that contains all the necessary steps to have a good model prediction. It needs to compare different hypothesis and select the one with better results. **Discuss** your results.

### 3 Extra Points

**Points: 5**

Use transfer learning with ImageNet or another already existing model to create a new model and compare it with the one you created previously (see [this](#)).