UNIVERSITY of NICOSIA

Course Code:	COMP-546DL	**Document Title:**	Exercise 2
Course Title:	Deep Learning and Reinforcement Learning	**Lecturer:**	Michalis Agathocleous

Project Logo classification: Deep Learning (Deadline: 31/03/2024)

The main goal of this project is to apply Deep Learning methods in the context of a Brand Identification Application.

Brand can be worth billions of dollars. Companies can also spend a significant amount of money to increase public awareness or perception of their brands. Campaigns can also backfire, such as when a company manipulated Wikipedia into displaying pictures with their logo.

Artificial intelligence is expected to play a large role in advertisement and advertisement monitoring in the future. In this project, we will focus on a specific machine learning problem: identifying the brand associated to a logo.

Project Tasks:

1. Download the given dataset.
2. Create your own training and validation dataset.
3. Use the sample code to load the data.
4. Use Keras and/or tensorflow Neural Network to build a classifier to handle this problem. We suggest looking at CNNs, transfer learning and data augmentation, but use whatever increases accuracy.
5. Use your own graphs to present your results.
6. Produce a report detailing what you tried, what the results are and what you would select as the final model. Also provide an accompanying python notebook and your final model. The notebook must contains the code of your experiments. The last cell must load your final model and apply it to a test set. The report can be within the notebook, similarly to the tutorials used in the course.

Useful Links:

https://www.tensorflow.org/tutorials/images/transfer_learning_with_hub
https://github.com/valohai/keras-example/blob/master/cifar10_cnn.py
https://colab.research.google.com/github/seyrankhademi/ResNet_CIFAR10/blob/master/CIFAR10_ResNet.ipynb

Data:

This dataset contains images of brand logo and the associated labels.

http://image.ntua.gr/iva/datasets/flickr_logos/

Evaluation:

Final grade will be calculated based on the below table:

Max Points	Task
0.5	Data Pre-processing
2.0	Methodology
0.5	Code based on Keras
0.5	Report
0.5-|1-r|x0.5	Where r is your method ranking based on accuracy

Deliverables:

You have to send a .zip file with the name <your_id> .zip on the online platform.

Include:

a. A detailed report for the above Tasks. Please explain in detail your:
    a. Model architectures
    b. Methodology
    c. Method evaluation
b. An accompanying python notebook containing your experiments and your final model. The last cell must load your final model and apply it to a test set.
c. Any other related code to this project.