**Floral classification using Residual Neural Networks (Computer Vision)**

**Abstract**

Computer Science industry is currently making advancements in Computer Vision and as part of that, there are several image-recognition and identification algorithms that came into existance. One such application is identification of flora and fauna from the digital images. Such appliations to identify the flower type given the image can be very beneficial tool in the area of botany, horticulture and agriculture. Besides improving the research possibilities in the mentioned fields, it can be used as entertaining learning tool or it can be applied to other similar domains. Flower classification can be quite challenging task, since the majority of flowers have highly similar main features. In this project we aim to build a Residual Neural Network (ResNet) by optimising the weights and biases of the layers and neurons by residual analysis and back propagation of gradients. We will also train the model to identify and classify the images based on the floura present in the images. In addition, we will also test the model built and perform model evaluation.

**Key Words:** Computer Vision, image classification, Neural Networks, Feed Forward Neural Networks, Back Propagation in Neural Networks, Optimising Weights and Biases in Neural Networks

**References:**

1. K. Mitrović and D. Milošević, "Flower Classification with Convolutional Neural Networks," 2019 23rd International Conference on System Theory, Control and Computing (ICSTCC), Sinaia, Romania, 2019, pp. 845-850, doi: 10.1109/ICSTCC.2019.8885580.
2. B. Shi, N. Calabretta and R. Stabile, "Image Classification with a 3-Layer SOA-Based Photonic Integrated Neural Network," 2019 24th OptoElectronics and Communications Conference (OECC) and 2019 International Conference on Photonics in Switching and Computing (PSC), Fukuoka, Japan, 2019, pp. 1-3, doi: 10.23919/PS.2019.8817694.

**Tools/Technologies**:

1. Python 3.x,

2. Python Libraries (numpy, pandas, scikit-learn, seaborn, matplotlib, etc),

3. Anaconda-Navigator,

4. Jupyter Notebook,

5. PyCharm