**Fast Food Classification**

**Abstract**

Food images dominate across social media platforms and drive restaurant selection and travel but are still unorganized due to the sheer volume of images. Utilized correctly, food image classification can improve food experiences across the board, such as to recommend dishes and new eateries, improve cuisine lookup, and help people make the right food choices for their diets. In this paper, we explore the problem of food image classification through training convolutional neural networks

**About Dataset:**

This is **Fast Food Classification** data set containing images of **5 different** types of **fast food**. Each directory represents a **class**, and **each class** represents a **food type**. The Classes are

* **Baked Potato**
* **Burger**
* **Crispy Chicken**
* **Donut**
* **Fries**
* **Hot Dog**
* **Pizza**
* **Sandwich**
* **Taco**
* **Taquito**

The data set is **divided into 3 parts**, the **Tensorflow records**, **Training data set** and **Validation/Evaluation data set**.

* The TensorFlow records directory is further **divided into 2 parts**, the **training images** and the **validation images**. These images are rotated, flipped and zoomed in the augmentation process. No other augmentation is applied.
* Unlike the **Tensorflow records data**, the **Training data and validation data** contains **direct images**. These are raw images. So, **any kind of augmentation** can be applied on them.

**Model Implementation:**

A convolutional neural network is a feed-forward neural network that is generally used to analyze visual images by processing data with grid-like topology

ReLU stands for the rectified linear unit. Once the feature maps are extracted, the next step is to move them to a ReLU layer.

ReLU performs an element-wise operation and sets all the negative pixels to 0. It introduces non-linearity to the network, and the generated output is a rectified feature map.

We have 2 dense layers and 1 output layer.

**Results & Findings:**

We tested different model architectures against the same Food dataset and classification problem. The model made a few errors, like it **classified a Sandwich as Burger**. But if you look at the image, you will find that the **features of that image for being sandwich is relatively lower than the features for being burger**.

**Future:**

Future work would involve more optimization on hyperparameters and model aspects such as which layers to freeze versus make trainable during transfer learning. Due to computing resource and time constraints, most model implementation decisions were made by examining the convergence of the model and relative metrics from training versus validation, but an exhaustive hyperparameter search would have been a more empirical approach.