**CSYE7374 - Cognitive Computing & Deep Neural Networks**

**Assignment 1 – Convolutional Neural Network Analysis**

**By**

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The base CIFAR-10 CNN model from keras-examples have a configuration consisting of combination of Conv2D, ReLU Activation, MaxPooling2D, Dropout and Dense layers. This model tends to underfit and so improvements have been made to this model by using few layers different than those mentioned above.

**SpatialDropout2D layer:- The addition of Spatial dropout layers with 20% dropout rate is avoid the model to overfit during higher epochs. Spatial dropout 2d performs the same function as Dropout, however it drops entire 2D feature maps instead of individual elements. If adjacent pixels within feature maps are strongly correlated then regular dropout will not regularize the activations and will otherwise just result in an effective learning rate decrease. In this case, SpatialDropout2D will help promote independence between feature maps and should be used instead.**

**ParametricReLU layer:- The PReLU layer is** generalizes the traditional rectified unit. PReLU improves model fitting with nearly zero extra computational cost and little overfitting risk. Second, we derive a robust initialization method that particularly considers the rectifier nonlinearities.