CSE 465

Section: 03

Project Idea

Topic:

Comparative Analysis of Custom CNN and Feedforward Network for Tiny ImageNet Classification.

Summary:

This project aims to compare the effectiveness of a custom CNN (Convolutional Neural Network) and a Feedforward Network for image classification using a small dataset from Tiny ImageNet. The dataset comprises 500-1000 images across ten distinct categories. The objective is to understand which neural network architecture performs better in scenarios with limited data.

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What we want to do:

Our primary goal is to conduct a comparative study between a custom CNN and a Feedforward Network in the context of image classification using a limited dataset from Tiny ImageNet. Firstly, we will curate a dataset consisting of 500-1000 images from Tiny ImageNet, evenly distributed across ten distinct categories. Then we will design and implement a custom CNN architecture and a Feedforward Network with a suitable structure. To ensure optimal performance, the models will be fine-tuned and validated to prevent overfitting. Subsequently, a crucial phase involves testing the models on entirely new images that were not part of the training set. The objective is to assess their classification accuracy and efficiency. Through a detailed analysis of the results, we will gain insights into the comparative effectiveness of these two models when dealing with a limited dataset. This study contributes to a better understanding of their respective capabilities in image classification tasks with constrained data availability.

By comparing the accuracy results of the custom CNN and the Feedforward Network, we aim to draw conclusions about which model performs better on the small-scale image classification task.