Capstone weekly report#6

Concerning the issue encountered last week, the key resolution involves ensuring the compatibility of the cuDNN, CUDA, and TensorFlow versions. It was apparent that my system harbored three incompatible versions of the cuDNN library. Consequently, I procured an alternative cuDNN package, namely cudnn-local-repo-ubuntu2004-8.6.0.163\_1.0-1\_amd64.deb, compatible with macOS. Following the guidelines outlined in reference 1, I successfully rectified the error.

An error arose during the application of the weight-ratio method to address the dataset imbalance. After perusing several articles, I opted for down-sampling as a viable approach to handle the data imbalance, resulting in an equitable distribution of 1000 images per class.

Before tackling the imbalance and sizing predicament, the model's accuracy was a mere 8% with the utilization of the pre-trained ResNet50 model. My attempt to improve the situation by employing the pre-trained EfficientNetB3 model did not yield a substantial increase in accuracy. My research also encompassed an exploration of an article elucidating the performance disparities of various pre-trained models in food classification tasks.

A screenshot of a table

Description automatically generated

<https://github.com/is2ai/central-asian-food-dataset>

To delve into the causes of the low accuracy, my focus shifted towards the images within the first 5 classes. Subsequently, I reran the model, scrutinized the outcomes, and reassessed the code for any discernible alterations in accuracy. Despite these efforts, the accuracy in classifying the 5 classes hovered around 27%, an outcome deemed unsatisfactory. Consequently, my objectives for the upcoming week revolve around refining the model's structure and fine-tuning hyperparameters to augment accuracy.

Related reading:

1. <https://docs.nvidia.com/deeplearning/cudnn/install-guide/index.html>
2. <https://towardsdatascience.com/4-ways-to-improve-class-imbalance-for-image-data-9adec8f390f1>
3. <https://towardsdatascience.com/how-to-handle-imbalance-data-and-small-training-sets-in-ml-989f8053531d>
4. <https://arxiv.org/pdf/2308.03272v3.pdf>