

## ABSTRACT

The application of Deep Learning models help human task across various fields especially image classification task. However, this high-level performance is often observed in closed-world classification settings, which limit the model's ability to learn beyond its initial training data. The model's inability to dynamically incorporate new classifications contrasts with the natural process of human learning, which is inherently incremental and continuous. This limitation demands that models be capable of adapting to evolving inputs while maintaining previously learned knowledge. Unfortunately, this requirement often leads to catastrophic forgetting, where older knowledge is lost when the model is introduced to new information. To address this issue, the Class Incremental Learning (CIL) method was developed to facilitate training while balancing old and new knowledge. One of the high-performing CIL algorithms is the Bias Correction Method (BiC). BiC improves model bias towards new classes through a two-phase training strategy. This study implements BiC on a dataset consisting of 20 classes from ImageNet100 under various scenarios. The research scenarios involve testing multiple hyperparameters, including pixel size, learning rate, and class increment size (step size). The results indicate that BiC achieves the highest accuracy improvement of 88.7%, with a 0.7% increase in the 2-step size scenario. Additionally, BiC yields the most significant accuracy gain of 8.79% in the 4-step size scenario. These findings reinforce the effectiveness of the BiC Layer in mitigating catastrophic forgetting and accelerating model training in limited-data scenarios.

**Keywords** : BiC Method, Class Incremental Learning, Image Classification, ResNet, ImageNet