Submission Summary

Conference Name
2025 3rd International Conference on Communication, Security, and Artificial Intelligence

Track Name
Track-9: Machine Learning and Deep Learning: Methods, Designs, Implementations, Techniques and Applications

Paper ID
475

Paper Title
Hyperparameter Optimization Using Various Optimizers

Abstract
Optimizing hyperparameters is essential for improving ML model performance. In this work, we investigate and contrast the performance of multiple optimizers on a particular dataset and task. Their performance in terms of accuracy, convergence speed, and computing efficiency will be assessed in order to shed light on the associated trade-offs. Under carefully monitored experimental conditions, optimizers like Adam, RMSprop, Stochastic Gradient Descent (SGD), and others are examined. Our goal in conducting these assessments is to find trends in their behavior under various circumstances, including variations in learning rates and batch sizes.

Our results show that although some optimizers provide faster convergence, accuracy may suffer, or computing overhead may increase. Others could need more repetitions to get similar results, even though they are computationally lighter. These trade-offs highlight how crucial it is to choose the right optimizer depending on the particular needs of a task. By demonstrating how optimizers operate in various settings using different optimization techniques also, this study advances our understanding of hyperparameter tuning and aids practitioners in making well-informed decisions when creating models. Overall, the findings show that there is no one optimal optimizer that works for all problems; rather, the best option varies depending on the problem's features, the data, and the computational limitations.

Created
12/25/2024, 10:04:31 PM

Last Modified
12/25/2024, 10:04:31 PM

Authors
Keshav Kumar (Galgotias University) <keshav.kr2825@gmail.com>
Jayant Sikarwar (Galgotias University) <jayantsikarwar205.js@gmail.com>

Submission Files
Abstract.docx (14.2 Kb, 12/25/2024, 10:04:19 PM)

Supplementary Files

BT40497_Research_Paper2.docx (123.8 Kb, 1/8/2025, 9:46:51 AM)