Comparing Hyperdimensional Computing to Deep Learning for Natural Language Processing Tasks

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***Abstract*—In this project, we will compare the performance of deep learning models (e.g. Transformers, Convolutional Neural Networks (CNN), Long Short-Term Memory (LSTM) models) to HDC models on a variety of NLP tasks using a range of metrics and evaluate their relative strengths and weaknesses.**

***Index Terms*—hyperdimensional computing, HDC, deep learning, natural language processing, NLP**

I. Introduction

[1]

II. Results

TABLE I
HDC accuracy scores by dataset size.

Examples	Dataset Pct.	Accuracy
21	0.0001	0.2682
210	0.0010	0.8375
2100	0.0100	0.9593
4200	0.0200	0.9659
10501	0.0500	0.9700

References

[1] N. Thakur, N. Reimers, A. Rücklé, A. Srivastava, and I. Gurevych, "BEIR: A heterogenous benchmark for zero-shot evaluation of information retrieval models," *CoRR*, vol. abs/2104.08663, 2021. [Online]. Available: https://arxiv.org/abs/2104.08663