STA414 Assignment A4

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Due: March 31st, 23:59 on Crowdmark

1 Introduction

The goal of this assignment is to practice researching different machine learning domains. This involves reading papers, analyzing hypotheses, and verifying findings with relevant literature.

2 Part One: Relevant Course Papers (20 marks)

Based on the topics covered in this course, I have selected five relevant papers and summarized their key contributions and impact. The table below provides an overview:

Paper Title	Description	Relevance to Course
Learning Transferable Visual Models From Natural Language	This paper introduces a model that efficiently combines text and image models for zero-shot learning using textual prompts and an image. It lays the foundation for multi-modal learning.	Connects language and image embeddings, compares against BOW methods, and uses contrastive learning.

Table 1: Five recent research papers

3 Part Two: Table of Hypotheses (20 marks)

From the papers reviewed, I propose five hypotheses that could enhance their findings. The table below summarizes them:

Hypothesis	Justification
Hypothesis 1	Explanation of how this could improve results, referencing specific papers.

Table 2: Hypotheses for improving machine learning models

4 Part Three: Hypothesis Verification and Explanation (50 marks)

To verify one of the proposed hypotheses, I have identified a relevant research paper. Below is a structured breakdown of my findings:

4.1 Introduction to the Paper

Briefly introduce the paper and its key contributions.

4.2 Background Hypothesis

Explain the hypothesis from the background research and why it is relevant.

4.3 Key Results

Summarize the results of the paper and how they relate to the hypothesis.

4.4 Next Steps

Discuss possible future research directions based on the findings.

5 Conclusion

Summarize key learnings from this assignment and any insights gained from reviewing the literature.