1. Introduction

簡要介紹研究目的和目標

摘要性描述資料集特徵、目標和研究方法

1. Data Pre-processing

描述資料來源、格式、大小等

1. Feature Adding:
2. Normalization
3. Missing Values : Using package pandas filled\_data = data.fillna(method='ffill')

資料清理步驟，包括缺失值處理、特徵工程、標準化/正規化等

1. Machine Learning Approaches Explored

Approach 1

Long Short-Term Memory (LSTM), is a specialized type of neural network designed to overcome the limitations of traditional recurrent neural networks (RNNs). It excels in capturing long-term dependencies in sequential data by incorporating memory cells. At predicting future bike demand, which is based on past usage patterns considering factors like time, weather, or holiday, these features make LSTM networks particularly effective in modeling sequences.引用相關文獻支持該方法

Advantages:

* Handling Long-Term Dependencies: LSTM is designed to address long-term dependency issues, making it effective in understanding relationships in long sequences of data.
* Adjustable Parameters: It offers flexibility with various adjustable parameters, allowing adaptability to different data and tasks. (which can also be viewed as a kind of disadvantage)

Disadvantages:

* Complexity: LSTM's complexity requires tuning multiple parameters, leading to longer training times and increased computational demands.
* Overfitting: It may overfit, especially with small datasets or overly complex models, impacting generalization to new data. (And that’s what we may concentrate on later)

描述模型原理、優點和缺點

實驗設置和評估指標，包括參數設置

Approach 2

介紹第二種機器學習方法

引用相關文獻支持該方法

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Approach 3

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1. Comparison of Approaches

效率比較：模型訓練時間、預測速度等

擴展性比較：資料集大小對模型性能的影響

解釋性比較：模型是否易於解釋、可解釋性程度

1. Recommendation

基於比較結果推薦最佳方法

陳述推薦理由，包括效能、解釋性等方面的考量

推薦方法的優勢和劣勢