# Recurrent neural network implementations on the M4 dataset

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## Contents

# 1 Introduction

The purpose of this document is to describe the recurrent neural networks (RNNs) applied to the M4 dataset as an attempt to forecast the financial series in the M4 dataset.

# 2 Objectives

- To train non-seasonal and seasonal RNNs on the M4 dataset.
- To use these RNNs to forecast the financial series in the M4 dataset.
- To compare the performance of these RNNs to simpler statistical methods.
- To compare the performance of the RNNs to the M4 winning statistical-RNN hybrid model.

# 3 Background

For background on the M4 competition, see [1].

The winner of the M4 competition was a hybrid forecasting model that combined simple exponential smoothing methods with recurrent neural networks.

# References


[1] Thomas Delaney, *Meta-learning for financial forecasting*. https://github.com/thomasjdelaney/Financial-Forecasting/blob/master/latex/meta-learning method review/meta-learning_method_review.pdf, (2018)

[2] Slawek Smyl, Jai Ranganathan, Andrea Pasqua, *M4 Forecasting Competition: Introducing a New Hybrid ES-RNN Model*. https://eng.uber.com/m4-forecasting-competition/, (2018)

[3] Pablo Montero-Manso, Thiyanga Talagala, Rob J Hyndman, George Athanasopoulos, *M4metalearning*. https://github.com/robjhyndman/M4metalearning/, M4 Competition, (2018)

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[5] Thomas Delaney, *Forecasting Methods: An Overview*. https://github.com/thomasjdelaney/Financial-Forecasting/blob/master/latex/forecasting lit review/forecasting_lit_review.pdf, (2018)

[6] Evangelos Spiliotis, Spyros Makridakis, Vassilios Assimakopoulos, *The M4 Competition in Progress*. https://www.m4.unic.ac.cy/wp-content/uploads/2018/06/Evangelos_Spiliotis_ISF2018.pdf, (2018)