

# Capturing the Predictive Power of Cortical Learning Algorithms

HONORS RESEARCH PAPER

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COMPUTER SCIENCE

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# 1 Introduction

People have dreamed of AI for thousands of years  
Logic and heuristics  
Computational neuroscience approach  
Briefly discuss Numenta and CLAs

# 2 Time Series

Motivate the problem, time series are everywhere  
Talk about ARIMA models

# 3 Hierarchical Temporal Memory

## 3.1 The Neocortex

Overview of the neocortex  
Pyramidal Neurons

## 3.2 Hierarchical Temporal Memory

Sequence memory - SDRs and transitions  
Variable order sequence memory - cells per minicolumn

# 4 Literature Review

Does anyone know if its able to do this?  
It has been used in applications, look there

# 5 Experiment Design

Hardware and language  
Numerical analysis-Epsilon comparisons  
Wrote wrapper and swarming utility  
LOTS of swarming

# 6 Results

# 7 Further Work





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