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# SHIDA WANG (汪锦达)

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GitHub: <https://github.com/radarFudan>

## EDUCATION

B.S. (Math), Fudan University, 2020

Ph.D. (Math), National University of Singapore (NUS), Expected 2024

Supervisor: Qianxiao Li

## RESEARCH INTEREST

Sequence Modelling, Recurrent Neural Network, Large Language Model, State-space Model

## PAPERS

Inverse Approximation Theory for Nonlinear Recurrent Neural Networks (ICLR 2024, spotlight)

State-space models with layer-wise nonlinearity are universal approximators with exponential decaying memory (NeurIPS 2023)

Efficient Hyperdimensional Computing (ECML 2023)

A Brief Survey on the Approximation Theory for Sequence Modelling (JML 2023)

## DRAFTS

StableSSM: Alleviating the Curse of Memory in State-space Models through Stable Reparameterization (Under review)

LongSSM: On the Length Extension of State-space Models in Language Modelling (Under review)

Integrating Deep Learning and Synthetic Biology: A Co-Design Approach for Enhancing Gene Expression via N-terminal Coding Sequences (Under review)

HyperSNN: A new efficient and robust deep learning model for resource constrained control applications (Under review)

## EXPERIENCE

Internship at SAIL (2023.04-12):

Investigated the length extension in recurrent language models (state-space models)

Internship at Advance.AI (2021.08-10):

Investigated general anomaly detection techniques such as GAN and Autoencoder.

First Place in Citadel APAC Regional Datathon, Spring 2021

Teaching Assistant at NUS for DSA5102 (2020.08-11, 2021.08-11)

Internship at Megvii (2019.07-12):

Worked on basic models and Neural Architecture Search.

Internship at Goku Data Limited (2019.01-03):

Worked with daily stock data and tried to produce some new factors

## REVIEW EXPERIENCE

Reviewer for AISTAT 2023, 2024, HRI 2024, CoLLAs 2024, ACM MM 2024, ECCV 2024, COLM 2024

## SKILLS

Fluent in Python (PyTorch, JAX, Triton, TensorFlow), C/C++, Haskell

Familiar with data structure, algorithm, operating system, and parallel programming

## RELATED COURSES

Probability, Markov Chain, Brownian motion and Stochastic Calculus, Stochastic Control, Optimal Stopping and Stochastic Control in Finance, Topics in Differential Equations (Fluid Equation), Optimization, Microeconomics, Macroeconomics