Haolin (Dinok) Li

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EDUCATION

Harbin Institute of Technology (HIT)| Computer Science and Technology Sep 2021 - Present

- *Candidate for Master of Engineering in Computer Technology;* Overall GPA: 85/100;
- Co-Supervised by Professors Hongwei Liu and Zhan Zhang;
- Core Modules: High-Performance Computer Architecture (95), Principles and Application of Artificial Neural Networks (93), Advanced Database System (89), Embedded Computing (86)

Harbin Institute of Technology (HIT)| Computer Science and Technology Jul 2019 - Jul 2022

- *Bachelor of Engineering in Artificial Intelligence (Minor);* Overall GPA:89/100;
- Core Modules: Python Programming (94), Intelligentie Visual Computing (92), Computer systems Fundamentals (91.5), Essentials of Computer Algorithms (92), Graduation Design (88)

Harbin Institute of Technology (HIT)| School of Civil Engineering Aug 2017 - Jun 2021

- *Bachelor of Engineering in Engineering Management;* Overall GPA: 79/100;
- Relevant Modules: Graduation Design (91), Introduction to Machine Learning in Civil Engineering (90)

RESEARCH INTEREST

- **Distributed Stream Processing System:** Resource allocation, load balancing, and task scheduling using reinforcement learning on Stream Processing System, especially Flink.
- **Mobile Stream Computing:** Deploying Stream Processing System on edge node with limited computing resources to solve mobile device mobility, power saving, network error, etc.

PUBLICATIONS

In Prep. :

- Zhan Zhang, Haolin Li etc. "Flink: Multi-level Collaborative Reconfiguration Strategy" (Abstract available upon request)

RESEARCH EXPERIENCE

Mobility-aware Elastic Strategy in Mobile Stream Computing | *Thesis* Sept. 2022 - Present

Supervisor: Hongwei Liu, Professor at the School of Computing, Harbin Institute of Technology

- Determine the initial placement of operators based on initial information, such as mobile device location and movement speed.
- Model the elastic parallelism configuration problem for Distributed Stream Processing System(DSPS) in a mobile computing environment and design a reinforcement learning algorithm to resolve the problem.
- Propose a hierarchical control strategy to allocate resources in a mobile stream environment and implement both the algorithm and control strategy in a real environment.
- Deploy Flink on resource-limited edge devices and evaluate the proposed method.

Flink: Multi-level Collaborative Reconfiguration Strategy | *R.A.* Mar. 2022 – Aug. 2022

Supervisor: Zuo DeCheng, Professor at the School of Computing, Harbin Institute of Technology

- Proposed a multi-level collaborative reconfiguration strategy on DSPS, composed of an elasticity, scheduling, and partitioning algorithm.
- Assisted in implementing and evaluating the strategy and the elasticity algorithm. The experimental results showed that the strategy had good adaptability and low reconfiguration overhead.

Flink: Resource Resilient Scheduling with Reinforcement Learning | *Thesis* Nov. 2021 – Jun. 2022

Supervisor: Zhan Zhang, Associate Professor at the School of Computing, Harbin Institute of Technology

- Investigated reinforcement learning methods to solve the elastic parallelism configuration problem and modeled the problem as a Markov Decision Process for DSPS.
- Reduced the problem model with Queueing Theory and proposed a Model-based learning approach.
- Evaluated the proposed method through both simulation and real testbed experiments. The experiment results demonstrated the method’s effectiveness in terms of cumulative reward and convergence speed.

HONORS AND AWARDS

School Level	Outstanding Student	Oct. 2022
2nd Class	Academic Scholarship	Sep. 2022
3rd Class	Academic Scholarship	Sep. 2021
Individual	People's Scholarship	Mar. 2021
1st Prize (top 5%)	The Chinese Mathematics Competitions in Heilongjiang	Sep. 2021

TEACHING EXPERIENCE

Computer System | HIT | *T.A.* Mar. 2022 – Jul. 2022

- Guided undergraduates in the elite class through experiments, including the classic Bomb Lab, Attack Lab, Shell Lab, etc.
- Led students in review sessions on x86-64 instructions, dynamic memory allocation, as well as various processes and signals.
- Graded term papers, final examinations, and experiments.

College Computer-Introduction to Computing Thinking |HIT | *T.A.* Sep. 2021 – Dec. 2021

- Explained complex concepts for first-year students, covering basic computer knowledge, basic algorithms, and simple database language during office hours.
- Managed the MOOC platform for this course and graded final examinations.

PROFESSIONAL SKILLS

- **Computer languages:** Java, Python, C, MATLAB, Html, JavaScript.
- **Tools:** Git, GDB, Photoshop, CAD, Ubuntu, Anaconda, TensorFlow.