

Kai Shen

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EDUCATION

University of Toronto

September 2022 - Present

- M.A.Sc. in Department of Electrical and Computer Engineering
- Advisor: Baochun Li

The Chinese University of Hong Kong, Shenzhen

May 2022

- B.Eng in School of Data Science, with Honours, First Class
- Major in Computer Science and Engineering
- Worked as Undergraduate Student Teaching Fellows (USTF) in Operating System
- Core Courses: Networks(A), Cloud Computing(A), Software Engineering(A), Programming Paradigms(A), Distributed Computing(A), Operating Systems(A-), Computer Architecture(A-), Optimization(A-)

University of California, Berkeley

June 2019 - August 2019

- Summer Program
- Course: Data Structures and Algorithms

RESEARCH INTERESTS

Networking, Multimedia Streaming, Federated Learning, Optimization

PUBLICATION

- Dayou Zhang, Kai Shen¹, Fangxin Wang, Dan Wang, Jiangchuan Liu. "Towards Joint Loss and Bitrate Adaptation in Realtime Video Streaming," in IEEE ICME, 2022.
- Kai Shen, Dayou Zhang, Zi Zhu, Lei Zhang, Fangxin Wang, Dan Wang. "SJA: Server-driven Joint Adaptation of Loss and Bitrate for Multi-Party Realtime Video Streaming," in IEEE INFOCOM, 2023.

RESEARCH EXPERIENCES

Deep-neural-network-based Streaming Transmission Optimization

CUHK(SZ)

Intelligent Networking and Multimedia Laboratory, supervised by Prof. Fangxin Wang

03/2021 - 08/2022

- Proposed a joint adaptive solution of bitrate and packet loss for real-time transmission based on UDP protocol to maximize Quality of Experience(QoE)
- Implemented a control system by applying Reinforcement Learning algorithm based on current network status
- Implemented a joint framework for packet transmission with minimized latency by trading extra bandwidth or slightly sacrificing video quality.

Printer Control Project

CUHK(SZ)

AIoT Laboratory, supervised by Prof. Yeh-Ching Chung

06/2020 - 12/2020

- Developed an integrated printer control system which can process millions of data
- Implemented a multi-threaded LSTM-based OCR component for image processing and text recognition
- Configured a high-performance document retrieval widget with Solr

HONORS AND AWARDS

- Dean's List, School of Data Science 2019 - 2021
- Academic Performance Scholarship: 20,000 RMB 2020 - 2021
- Undergraduate Student Research Scholarship: 1,000 RMB per month 2020 - 2022
- Bowen's Admission Scholarship: 30,000 RMB per year 2018 - 2021

¹co-first author with equal contribution

SELECTED COURSE PROJECT

Computer Architecture

MIPS Simulator

04/2021

- Assembled MIPS assembly language files to generate output files composed of machine code.
- Built a program that simulates the execution of machine codes.

Software Engineering

EasyGo: Travel Planning Application

03/2021

- Developed an Android application for route planning and travel information sharing.
- Designed algorithms for route planning customization to replace tedious procedure of travel planning

Distributed and Parallel Computing

N-body Simulation

12/2020

- Implemented a multi-version program to simulate an astronomical N-body system in two-dimensions.
- Five versions based on different frameworks: sequential version, Pthread version, OpenMP version, MPI version and MPI + OpenMP version.

Cloud Computing

Model and Platform Performance Evaluation on AIRS Cloud

10/2020

- An analytic project about the evaluation of AIRS cloud performance and different algorithm models.
- Compared metrics including throughput, speedup and efficiency of Hadoop and Spark deployed on AIRS Cloud.
- Compared metrics including cost, accuracy, and time of machine learning algorithms deployed on AIRS Cloud.

SKILLS

Computer Skills

C/C++, Python, SQL, R, MATLAB, Java, JavaScript, Git, Excel

Languages

Chinese (Native), English (Fluent, IELTS-7.0)

Interest

basketball, badminton, hiking