XINKAI WANG

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Department of Computer Science and Engineering, Shanghai Jiao Tong University
800 Dongchuan Road, Minhang District, Shanghai, China 200240

RESEARCH INTERESTS

Datacenter Optimization, Computer Architecture Design, Energy Efficiency

EDUCATION

Shanghai Jiao Tong University Sep. 2021 - Present
2nd Year, Ph.D. Student, Computer Science and Technology Supervisor: Prof. Chao Li
Shanghai Jiao Tong University Sep. 2017 - June 2021
Bachelor of Engineering, Computer Science and Technology
Shanghai Jiao Tong University Sep. 2017 - June 2021
Zhiyuan Honors Program of Engineering

PUBLICATIONS

CONFERENCES

[C1] **Xinkai Wang**, Chao Li, Lu Zhang, Xiaofeng Hou, Quan Chen, and Minyi Guo "Exploring Efficient Microservice Level Parallelism". *International Parallel and Distributed Processing Symposium* (**IPDPS 2022**)

[C2] Lu Zhang, Chao Li, **Xinkai Wang**, Weiqi Feng, Zheng Yu, and Minyi Guo, "FIRST: Exploiting the Multi-Dimensional Attributes of Functions for Power-Aware Serverless Computing". *International Parallel and Distributed Processing Symposium* (**IPDPS 2023**)

UNDER REVIEW

[C1] Lingyu Sun, **Xinkai Wang**, Chao Li, Xiaofeng Hou, Jiacheng Liu, Jingwen Leng, Quan Chen, and Minyi Guo "TALC: Timeliness Augmented Learning for Control in Latency-variable and Resource-limited Autonomous Micromobility Systems". (*Submitted to ATC 2023*)

[J1] **Xinkai Wang**, Chao Li, Lu Zhang, Xiaofeng Hou, Quan Chen, and Minyi Guo "Exploring Robust and Efficient Microservice Level Parallelism". *Transactions on Parallel and Distributed Systems* (**TPDS**)

[J2] Lu Zhang, Du Liu, Yechen Xu, **Xinkai Wang**, Lingyu Sun, Yifei Pu, Xiaofeng Hou, Chao Li, and Minyi Guo "Power Synchronization: Taming Massive Diversified Serverless Functions under Power Constraints". *SCIENCE CHINA Information Sciences* (**SCIS**)

PATENTS

Chinese Patent Filed, CN202211548729.3 2022
Idle resource-based intelligent power allocation system
Chinese Patent Granted, CN202111524128.4 2022
Request scheduler for multi-dimensional dynamic microservice-based applications
Chinese Patent Granted, CN202110659654.5 2021
Power management for serverless functions based on intermediate representation

HONORS AND AWARDS

IPDPS 2023 Travel Grant 2023
Excellent Student Scholarship *(3 in CSE Department)* 2021
Outstanding Graduate *(Top 15% in SJTU Bachelors)* 2021
Zhiyuan Honor Degree of Bachelor *(Top 5% in All Engineering Departments)* 2021
Outstanding Thesis of Bachelor *(Top 5% in CSE Department)* 2021
First-class Scholarship *(1st in CSE Department of SJTU)* 2020
Zhiyuan Honor Scholarship *(Top 5% in All Engineering Departments)* 2017-2020

RESEARCH EXPERIENCE

Research Assistant SAIL Lab, Shanghai Jiao Tong University Sep. 2020 - Present
Supervised by Prof. Chao Li

- **Microservice Architecture Optimization** Sep. 2020 - May. 2022
  We find the potential of parallelism within microservice architecture and
- **Autonomous Embedded Systems** May. 2022 - Dec. 2022
  We find the horizontal and vertical computational harvesting opportunities within autonomous embedded systems and utilize them to design novel power management schemes based on reinforcement-learning techniques. This work is submitted to xxx.
- **Serverless Architecture Optimization** Sep. 2021 - Oct. 2022
  We find that current power management schemes fail to synthesize the multi-dimensional attributes of serverless functions and we propose FIRST to enable servers better orchestrate diverse functions. This work is accepted by IPDPS 2023.

INDUSTRY EXPERIENCE

Research Intern TRE Group, Alibaba, Hangzhou Feb. 2022 - Aug. 2022
I worked on xxx

Research Intern Microsoft Research Asia, Microsoft, Beijing Feb. 2022 - May. 2022
I worked on power-aware VM management in Azure.

Research Intern Cloud Innovation Lab, Huawei, Xi'an July 2021 - Sep. 2021
I worked on the online scheduling engine for VMs in Huawei Cloud.

TEACHING EXPERIENCE

Teaching Assistant @CS236 - Cloud Computing Technology Fall, 2021-2022
I schedule the project of cloud computing on Public Cloud.
Teaching Assistant @CS359 - Computer Architecture Fall, 2019
I finish the homework grading of the course.

SERVICES

Volunteer Experiences

Volunteer of the 2nd Excellent Young Scholar Forum of CSE Department 2020
Tutors of the Freshmen of CSE Department 2021 till now

Review Experiences

Sub-reviewer of ISCA(2021, 2022), MICRO(2022), HPCA(2022), ASPLOS(2022), ICDCS(2021).

PROFESSIONAL ACTIVITIES

Student Member Institute of Electrical and Electronics Engineers (IEEE)
Student Member Association for Computing Machinery (ACM)
Student Member China Computer Federation (CCF)

TALKS

Exploring Efficient Microservice Level Parallelism
Conference Talk, IPDPS'22, Virtual 2022
Exploiting the Multi-Dimensional Attributes for Power-Aware Serverless Computing
Conference Talk, IPDPS'23, Florida, USA 2023

SKILLS

Programming skills: C/C++, Python, Go, Matlab(basic)
Software and Framework: Latex, Docker, K8S
Extracurriculars: Badminton, Basketball
Languages: Chinese(native), English(fluent).