Peng Kang

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Education

The University of Texas at San Antonio
Ph.D. in Computer Science *2018 - 2024 (expected)*
- Dissertation: *SLO-Aware Resource Management for Edge Computing*
- Supervisor: Dr. Palden Lama

Xi'an Microelectronic Technology Institute
M.S. in Computer Science *2013 - 2016*
- Thesis: *Research on high reliability embedded real-time operating system*
- Supervisor: Prof. Xubang Shen

Nanjing University of Aeronautics and Astronautics
B.S. in Electrical Engineering *2009 - 2013*

Research Interests

Cloud/Edge Computing, Distributed System, and Machine Learning

Publications

Conference Publications

A Converting Autoencoder Toward Low-latency and Energy-efficient DNN Inference at the Edge.
Hasanul Mahmud, **Peng Kang**, Kevin Desai, Palden Lama and Sushil Prasad
In the *6th Workshop on Parallel AI and Systems for the Edge (PAISE)*, 2024.

High-throughput Real-time Edge Stream Processing with Topology-Aware Resource Matching.
Peng Kang, Samee U. Khan, Xiaobo Zhou, and Palden Lama
In *the 24nd IEEE International Symposium on Cluster, Cloud and Internet Computing (CCGrid)*, 2024.

Some New Observations on SLO-aware Edge Stream Processing.
Amna Shahid, **Peng Kang**, Palden Lama, and Samee U. Khan
In *IEEE Cloud Summit* 2023.

Kneescale: Efficient Resource Scaling for Serverless Computing at the Edge.
Xue Li, **Peng Kang**, Jordan Molone, Wei Wang, and Palden Lama
In *the 22nd IEEE International Symposium on Cluster, Cloud and Internet Computing (CCGrid)*, 2022.

SLO-Aware Virtual Rebalancing for Edge Stream Processing.
Peng Kang, Palden Lama, and Samee U. Khan
In *the 9th IEEE International Conference on Cloud Engineering (IC2E)*, 2021.

Robust Resource Scaling of Containerized Microservices with Probabilistic Machine Learning.
Peng Kang and Palden Lama
In *the 13th IEEE/ACM International Conference on Utility and Cloud Computing (UCC)*, 2020.

Journal Publications

Multicore embedded real-time scheduling algorithm based on gang scheduling.
Peng Kang, Congxiu Liu, and Xubang Shen
Microelectronics and Computer, 2016.

Under Review and In Preparation

Adaptive Performance Modeling for Edge Stream Processing System.
Peng Kang, Faiza Akram, Palden Lama, Samee U. Khan
Under review: *IEEE Transactions on Consumer Electronics*, 2023.

Working Experience

Google, Pittsburgh *05/2022 - 08/2022*
Software Engineer Intern
– Mentors: Tom Black, Max Glick

Jianxun Culture, Shanghai *01/2018 - 07/2018*
Software Development Engineer

Baidu, Beijing *10/2016 - 04/2017*
Software Reliability Engineer

Awards & Honors

2022 **Who's Who**, UTSA

2021 **NSDI'21 Student Grant**, The 18th USENIX Symposium on Networked Systems Design and Implementation (NSDI '21)

Alvarez Research Competitive Scholarship, UTSA

2020 **Phi Kappa Phi**, Honor Society

2008 **Provincial 2nd Prize**, National High School Mathematics League (Gansu, China)

Teaching Experience

Fall 2023 **System Programming**, Teaching Assistant
– Lab Recitation
– Class size: 127

Spring 2023 **Cloud Computing**, Teaching Assistant

Fall 2022 **Cloud Computing**, Teaching Assistant

Fall 2019 **Computer Organization**, Teaching Assistant
– Lab Recitation
– Class size: 80

Fall 2018 **Operating System**, Teaching Assistant

Presentations and Talks

SLO-Aware Virtual Rebalancing for Edge Stream Processing. IC2E, 2021.

Robust Resource Scaling of Containerized Microservices with Probabilistic Machine Learning. UCC, 2020.

UTSA AI Summit, 2019.

UTSA Computer Science Research Showcase, 2019, 2022.

Professional Services & Activities

Reviewer

2023 IEEE Transactions on Network Science and Engineering (TNSE)
2022 IEEE International Conference on Communications (ICC)

Web master

2020 - 2024 IEEE Computer Society Technical Committee on Distributed Processing (TCDP)

Professional Memberships

2019 - present IEEE Student Member

Mentoring

05/2023 - present
Faiza Akram, PhD Student, Mississippi State University
Project: *Explore data distribution at edge stream processing.*

06/2022 - 08/2023
Amna Shahid, Master Student, Mississippi State University, Graduated
Project: *Observation of data priority at edge stream processing.*

Certificates

2024 NSF AI Spring School

Google Project Management

Technical Skills

Python: Django/Tornado, Postgres/Mysql, Memcached/Redis, Celery/RabbitMQ, RESTful, Machine Learning (Scipy, Scikit-learn, Pandas, Keras, Tensorflow, PyTorch).

Java: Stream processing (Apache Storm, Apache Spark).

C/C++: OpenMP, Embedded OS (VxWorks), Linux system development.

Cloud: Google Cloud, AWS, KVM, Ubuntu/CentOS, Kubernetes, Docker, Microservices.

Miscellany: shell, git, Jenkins, Jetson Nano, Raspberry Pi, Project Management.

Miscellany

Running. 2017 Seoul International Marathon (4 hours). Texas Independence Relay (Mixed, No.18), 2022.

Cycling. 25 Days Cycling Tour from Chengdu to Lhasa via Sichuan Tibet Highway (1400 miles), 2013.

References

Palden Lama
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Samee U. Khan
Professor, and James Worth Bagley Chair
(662) 325-3912
skhan@ece.msstate.edu

Dakai Zhu
Professor
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