Liang Zhang

Senior Research Engineer
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Google Scholar, Linkedin

Areas of Specialization

Reinforcement learning; Federated learning; LLM inference acceleration; Cluster design for LLM; Energy Efficient Communication, Aerial communication networks; Multi AZ/Region Distributed learning.

Working Experiences

- **Saudi Aramco**
  Petroleum Engineer *Aug. 2024 - current*
  - **Working responsibilities**: GUI design, AI-assisted timestep selection / history matching for the GigaPOWERS simulator
- **Huawei Technologies Co., Ltd.**
  Senior Research Engineer *Aug. 2022 - Aug. 2024*
  - **Working responsibilities**: Llm inference acceleration by software and hardware synergy, design of architecture solutions for AI clusters, production development and customer-oriented strategy planning. Ascent D super-computing unit designing
- **Saudi Company for Artificial Intelligence (SCAI)**
  R&D Consultant, Part time *Sep. 2021 - Apr. 2022*
  - **Working responsibilities**: Delivering AI-related seminars, and AI-assisted solutions for smart city
- **Saudi Aramco**
  Deep Learning Engineer, Intern *Jun. 2020 - Aug. 2020*
  - **Working responsibilities**: CNN-based history matching for upstream petroleum simulation.
- **NEOM**
  Software Development Engineer, Intern *Apr. 2019 - Jun. 2019*
  - **Working responsibilities**: IOS App development in the domain of food chains.
- **Saudi Basic Industries Corporation (SABIC)**
  Research Engineer, Intern *Jun. 2018 - Aug. 2018*
  - **Working responsibilities**: Semiconductor device component analysis by using X-Ray diffraction.
- **Beijing Miyoshi Interactive Educational Technology Co., Ltd.**
  Senior lecture, Part-time *Sep. 2016 - Jun. 2017*
  - **Working responsibilities**: Delivering lectures of physics for middle school students (more than 500 students).

Education

- **King Abdullah University of Science and Technology (KAUST)** Thuwal, Saudi Arabia
  Doctor of Philosophy in Electrical and Computer Engineering *Aug. 2018 - Jun. 2022*
  - **Supervisor**: Prof. Basem Shihada
  - **Thesis title**: Learning-Based Approaches for Next-Generation Intelligent Networks
- **King Abdullah University of Science and Technology (KAUST)** Thuwal, Saudi Arabia
  Master of Science in Electrical Engineering *Aug. 2017 - Aug. 2018*
  - **Supervisor**: Prof. Kazuhiro Ohkawa
- **University of Science and Technology Beijing (USTB)** Beijing, China
  Bachelor of Science in Applied Physics *Sep. 2012 - Jun. 2016*
  - **Mentor**: Prof. Shen Luo

Highlighted Publications

- **L. Zhang**, A. Celik, S. Dang and B. Shihada, "Energy-Efficient Trajectory Optimization for UAV-Assisted IoT Networks" in *IEEE Transactions on Mobile Computing*, vol. 21, no. 12, pp. 4323-4337, 1 Dec. 2022 (one of the fifty most popular papers of TMC).
- **L. Zhang**, C. Zhang and B. Shihada, "Efficient Wireless Traffic Prediction at the Edge: A Federated Meta-Learning Approach" in *IEEE Communications Letters*, vol. 26, no. 7, pp. 1573-1577, Jul. 2022.
- **L. Zhang**, C. Zhang, S. Dang and B. Shihada, "Lessons from the Commercial Failure of Project Loon for 6G Research Roadmap Design" in *Frontiers in Communications and Networks*, vol. 3, 2022.
- **L. Zhang**, W. Abderrahim and B. Shihada, "Heterogeneous Traffic Offloading in Space-Air-Ground Integrated Networks" in *IEEE Access*, vol. 9, pp. 165462-165475, Dec. 2021.
- **L. Zhang**, G. Ma, A. Al-Ghadhban, S. Dang and B. Shihada, "ICAQ: Adaptive QoS System for 5G and Beyond Applications" in *IEEE ICCT*, Nanning, China, 2020.
- L. Bai, **L. Zhang***, G. Zhang, L. Zhang, P Medagliani, and S. Martin, "A Distributed Congestion Mitigation Mechanism Based on Neighboring Nodes Traffic Steering' *International Conference on Network of the Future* , Izmir, Turkey, 2023.
- X. Rao, H. Wang, **L. Zhang**, J. Li, S. Shang, P. Han, "FOGS: First-Order Gradient Supervision with Learning-based Graph for Traffic Flow Forecasting" in *IJCAI*, Messe Wien, Vienna, Austria, 2022
- Y. Xie, W. Pei, D. Guo, **L. Zhang**, H. Zhang, X. Guo, X. Xing, X. Yang, F. Wang, Q. Gui, Y. Wang, H. Chen, "Improving adhesion strength between layers of an implantable parylene-C electrode" in *Sensors and Actuators A: Physical*, vol. 260, pp. 117-123, 2017.
- F. Wang, D. Guo, Y. Xie, **L. Zhang**, W. Pei, H. Chen, "An implantable optrode composed of fiber and flexible thin-film electrode" in *Optoelectronics Letters*, vol. 14, no. 4, pp. 271-275, 2018.
- C. Zhang, G. Ma, **L. Zhang**, and B. Shihada, "Graph Convolutional Networks Empowered Origin-Destination Learning for Urban Traffic Prediction" *CAAI Transactions on Intelligence Technology.*

Professional Reviewing Experiences

- IEEE Transactions on Mobile Computing
- IEEE Communications Magazine
- IEEE Transactions on Wireless Communications
- IEEE Transactions on Communications
- IEEE Transactions on Vehicular Technology
- IEEE Wireless Communications Letters
- IEEE Communications Letters
- IEEE Internet of Things Journal
- Scientific Report
- IEEE Sensor Journal
- IEEE Access
- IEEE GLOBECOM
- IEEE VTC Fall 2022 (TPC Member)
- V-Electrical 2023 (Keynote speaker)

Grants

- KAUST Ph.D. Fellowship 2018 - 2022
- KAUST M.S. Scholarship 2017 - 2018
- Chinese National Scholarship by Ministry of Education of China, 2016 - 2017
- Huang Kun Scholarship by Chinese Academy of Sciences, 2015 - 2016

Technical and Soft Skills

- MACHINE LEARNING RELATED
  - llm service framework (vllm, TRT, and Deepspeed); LSTM from scratch by JAVA without any framework (like PyTorch or TensorFlow)
- PROGRAMMING LANGUAGES
  - **Highly advanced**: Python (NumPy, Pandas, TensorFlow, Torch, Sickit-Learn, Ryu, POX, Mininet, gym etc.), LATEX.
  - **Advanced**: Swift, Shell, Matlab, Java, C++
- OPERATING SYSTEMS
  - Windows, Apple OS, and Linux
  - Supercomputers and clusters: Shaheen/Ibex; Ascent C (NPU/GPU programming)