ZEXIN LI

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EDUCATION

University of California, Riverside September 2022 - Present
Ph.D candidate, Electrical Engineering
Advisor: Dr. Cong Liu

Southern University of Science and Technology September 2016 - June 2020
B.S. Computer Science and Technology
Advisor: Dr. Yuqun Zhang

RESEARCH INTERESTS

Real-time embedded systems, on-device machine learning, and cyber-physical systems.

EMPLOYMENT

University of California, Riverside September 2022 - Present
Electrical Engineering
Research Assistant, Host: Dr. Cong Liu

University of Texas at Dallas January 2022 - August 2022
Erik Jonsson School of Engineering & Computer Science
Research Assistant, Host: Dr. Cong Liu

Tecent Youtu Lab May 2021 - December 2021
Research Internship, Host: Dr. Shouhong Ding

Southern University of Science and Technology June 2020 - December 2020
Research Assistant, Host: Dr. Yuqun Zhang

Kwai Inc. November 2019 - June 2020
Research & Development Internship, Host: Dr. Bing Zhou

HONORS AND AWARDS

GSA Conference Travel Grants, University of California, Riverside. 2025

Dissertation Completion Fellowship Award, University of California, Riverside. 2025

Outstanding Paper Award, RTSS. 2025

GSA Conference Travel Grants, University of California, Riverside. 2024

Outstanding Paper Nomination, RTSS. 2023

Dean's Distinguished Fellowship, University of California, Riverside. 2022

Tencent Rhino-BirdElite Talent Training Program, Tencent. 2021

Outstanding Student Scholarship, Southern University of Science and Technology. 2019

Special Funds for the Cultivation of Guangdong College Students' Scientific and Technological Innovation. 2019

Special Funds for the Cultivation of Guangdong College Students' Scientific and Technological Innovation. 2018

RESEARCH PUBLICATION

Selected Publication:

- [RTSS'25, CCF-A] Yufei Li, **Zexin Li**, Yinglun Zhu, Cong Liu, "*LeMix: Unified Scheduling for LLM Training and Inference on Multi-GPU Systems*", in 46th IEEE Real-Time Systems Symposium, December, 2023, Boston, Massachusetts, USA. (Outstanding Paper: Top 4 of 200 Submissions - Top 2%)

- [RTSS'24, CCF-A] Ziliang Zhang, **Zexin Li**, Hyoseung Kim, Cong Liu, "*BOXR: Body and head motion Optimization framework for eXtended Reality*", in 45th IEEE Real-Time Systems Symposium, December, 2023, York, United Kingdom.

- [RTSS'24, CCF-A] Soheil Shirvani, Aritra Samanta, **Zexin Li**, Cong Liu, "*DuoJoule: Accurate On-Device Deep Reinforcement Learning for Energy and Timeliness*", in 45th IEEE Real-Time Systems Symposium, December, 2023, York, United Kingdom.

- [RTSS'23, CCF-A] Yufei Li, **Zexin Li**, Wei Yang, Cong Liu, "*RT-LM: Uncertainty-Aware Resource Management for Real-Time On-Device Language Models*", in 44th IEEE Real-Time Systems Symposium, December, 2023, Taipei, China.

- [RTSS'23, CCF-A] **Zexin Li**, Aritra Samanta, Yufei Li, Andrea Soltoggio, Hyoseung Kim, Cong Liu, "R^3*: On-device Real-Time Deep Reinforcement Learning for Autonomous Robotics*", in 44th IEEE Real-Time Systems Symposium, December, 2023, Taipei, China. (Outstanding Paper Nomination Noted by TPC; Top 2 in System Track.)

- [RTSS'23, CCF-A] **Zexin Li**, Tao Ren, Xiaoxi He, Cong Liu, "*RED: A Systematic Real-Time Scheduling Approach for Robotic Environmental Dynamics*", in 44th IEEE Real-Time Systems Symposium, December, 2023, Taipei, China.

- [CVPR'23, CCF-A] **Zexin Li***, Bangjie Yin*, Taiping Yao, Junfeng Guo, Shouhong Ding, Simin Chen, Cong Liu, "*Sibling-Attack: Rethinking Transferable Adversarial Attacks against Face Recognition*", in Conference on Computer Vision and Pattern Recognition, Vancouver, Canada, June, 2023. (*: Equal contribution)

- [JSA, CCF-B] **Zexin Li**, Yuqun Zhang, Ao Ding, Husheng Zhou, Cong Liu, "*Transferable Adversarial Attacks on ASR via Gradient Optimization*", Journal of Systems Architecture, December 2020.

Other Publication:

- [SPL] Xiaoxue Gao, **Zexin Li***, Yiming Chen, Cong Liu, Haizhou Li, "*Transferable Adversarial Attacks on ASR via Gradient Optimization*", IEEE Signal Processing Letters, August 2024. (*: Corresponding author)

- [AAAI'26, CCF-A] Saptarshi Nath, Christos Peridis, Eseoghene Benjamin, Xinran Liu, Soheil Kolouri, Peter Kinnell, **Zexin Li**, Cong Liu, Shirin Dora, Andrea Soltoggio, "*Collaborative Learning in Agentic Systems: A Collective AI is Greater Than the Sum of Its Parts*", in The 40th Annual AAAI Conference on Artificial Intelligence, January, 2026, Singapore.

- [EMNLP'25 Findings, CCF-B] Yiming Zeng, Wanhao Yu, **Zexin Li**, Tao Ren, Yu Ma, Jinghan Cao, Xiyan Chen, Tingting Yu, "*Bridging the Editing Gap in LLMs: FineEdit for Precise and Targeted Text Modifications*", in Empirical Methods in Natural Language Processing, November, 2025, Suzhou, China.

- [EMNLP'25, CCF-B] Simin Chen, Yiming Chen*, **Zexin Li***, Yifan Jiang, Zhongwei Wan, Yixin He, Dezhi Ran, Tianle Gu, Haizhou Li, Tao Xie, Baishakhi Ray, "*Recent Advances in Large Language Model Benchmarks against*

Data Contamination: From Static to Dynamic Evaluation", in Empirical Methods in Natural Language Processing, November, 2025, Suzhou, China. (*: Corresponding author)

· [FSE'24, CCF-A] Simin Chen, **Zexin Li**, Wei Yang, Cong Liu, "*DeciX: Explain Deep Learning Based Code Generation Applications*", in ACM International Conference on the Foundations of Software Engineering, July, 2024, Porto de Galinhas, Brazil, Brazil.

· [IROS'23, CCF-C] Shahab Nikkhoo, **Zexin Li**, Aritra Samanta, Yufei Li, Cong Liu, "*PIMbot: Policy and Incentive Manipulation for Multi-Robot Reinforcement Learning in Social Dilemmas*", in IEEE/RSJ International Conference on Intelligent Robots and Systems, October, 2023, Detroit, Michigan, USA.

· [ACL'23, CCF-A] Yufei Li, **Zexin Li**, Yingfan Gao, and Cong Liu, "*White-Box Multi-Objective Adversarial Attack on Dialogue Generation*", in The 61st Annual Meeting of the Association for Computational Linguistics, July, 2023, Toronto, Canada.

· [ACL'23, CCF-A] Yiming Chen, Simin Chen, **Zexin Li**, Wei Yang, Cong Liu, Robby Tan, and Haizhou Li, "*Dynamic Transformers Provide a False Sense of Efficiency*", in The 61st Annual Meeting of the Association for Computational Linguistics, July, 2023, Toronto, Canada.

Manuscripts Under Review:

· **Zexin Li**, Nikil Dutt, Cong Liu, "*Orion: Enabling Self-adaptive Memory Management for On-Device Online Continual Learning*", in submission.

· **Zexin Li**, Junjie Shi, Jian-jia Chen, Cong Liu, "*EOCL: Enabling Energy-aware On-device Online Continual Learning*", in submission.

· **Zexin Li**, Dongjoo Seo, Nikil Dutt, Jun Sheng, Cong Liu, "*AOCL: Concurrent Evaluation and Retraining of OCL-driven Autonomous Embedded Systems*", in submission.

· **Zexin Li**, Tao Ren, Johnathan Liu, Xiaoxi He, Cong Liu, "*RED: A Systematic Real-Time Scheduling Approach for Robotic Environmental Dynamics*", in submission to TCPS.

· **Zexin Li**, Ziliang Zhang, Hyoseung Kim, Cong Liu, "*PIMbot: Policy and Incentive Manipulation for Multi-Robot Reinforcement Learning in Social Dilemmas*", in submission to TECS.

· **Zexin Li***, Jiancheng Zhang*, Yufei Li, Yinglun Zhu, Cong Liu, "*Mixtraining: A Better Trade-Off Between Compute and Performance*", in submission. (*: Equal contribution)

· **Zexin Li**, Soroush Bateni, Cong Liu, "*Genie: Smart ROS-based Caching for Connected Autonomous Robots*", in arXiv.

· **Zexin Li**, Xiaoxi He, Yufei Li, Wei Yang, Lothar Thiele, Cong Liu, "*MIMONet: Multi-Input Multi-Output On-Device Deep Learning*", in submission to TECS.

· Yiming Zeng, Jinghan Cao, **Zexin Li**, Yiming Chen, Tao Ren, Dawei Xiang, Xidong Wu, Shangqian Gao, Tingting Yu, "*TreeDiff: AST-Guided Code Generation with Diffusion LLMs*", in arXiv.

· Xiaoxue Gao, **Zexin Li**, Yiming Chen, Nancy F. Chen, "*MORE: Multi-Objective Adversarial Attacks on Speech Recognition*", in arXiv.

· Yiming Zeng, Jinghan Cao, **Zexin Li**, Wanhao Yu, Zhankai Ye, Dawei Xiang, Ting Hua, Xin Liu, Shangqian Gao, Tingting Yu, "*HyperEdit: Unlocking Instruction-based Text Editing in LLMs via Hypernetworks*", in arXiv

· Yiming Chen, **Zexin Li**, Xianghu Yue, Robby T. Tan, Haizhou Li, "*NaturalSloth: Revisiting Denial-of-Service Attacks on Large Language Models*, in submission

· Peizhou Huang, Zixuan Zhong, Zhongwei Wan, Donghao Zhou, Samiul Alam, Xin Wang, **Zexin Li**, Zhihao Dou, Li Zhu, Jing Xiong, Chaofan Tao, Yan Xu, Dimitrios Dimitriadis, Tuo Zhang, Mi Zhang, "*MMDeepResearch-Bench: Grounded Evaluation & Alignment for Multimodal Deep Research Agents*, in arXiv

TEACHING EXPERIENCE

Teaching Assistant September 2019 – December 2020
Southern University of Science and Technology

· **Course Title: Object-oriented Programming and Design.** Assisted the instructor in delivering a core computer science course to approximately 40 undergraduate students. Conducted weekly recitation sessions to reinforce key programming concepts, clarified lecture material, and provided hands-on demonstrations of design patterns in practice. Designed and graded problem sets and quizzes, held regular office hours to provide individualized academic support, and offered guidance on debugging and code quality. Supported and evaluated semester-long group projects, focusing on teamwork, software design principles, and the application of object-oriented paradigms to real-world problems.

Teaching Assistant September 2018 – December 2019
Southern University of Science and Technology

· **Course Title: Data Structure and Algorithm Analysis.** Supported course delivery for around 40 students by organizing tutorial sessions on advanced data structures (e.g., trees, heaps, graphs) and algorithmic analysis techniques. Created supplemental learning materials, including algorithm visualization exercises and practice exam problems, to strengthen students' problem-solving skills. Collaborated with the instructor in developing assignments and ensuring fair grading standards. Mentored students individually and in small groups to improve coding efficiency, runtime analysis, and understanding of complexity theory. Assisted in supervising final projects where students implemented and benchmarked algorithms against real-world datasets.

Guest Lecturer 2023 – Present
University of California, Riverside

· **Course Title: Electrical Engineering Seminar.** Delivered several guest lectures in the graduate-level *EE 260* seminar, presenting advanced topics in real-time embedded systems and leading discussion with M.S. and Ph.D. students.

Invited Speaker 2023 – Present
University of California, Riverside

· Gave invited talks at the Center for Robotics and Intelligent Systems (CRIS), explaining core ideas in timing-predictable on-device ML to an interdisciplinary audience of robotics, controls, and ML researchers and students.

MENTORSHIP EXPERIENCE

I have had the fortunate opportunity to mentor or collaborate with the following students.

- **Yiming Zeng:** UConn, CS, 2024–Now (Co-author; Current Ph.D. student at UConn).
- **Wanhao Yu:** UNC, CS, 2025–Now (Co-author; Current Ph.D. student at UNC).
- **Yifan Chen:** UCR EE, 2023–Now (Project; Current Ph.D. student at UCR).
- **Ziliang Zhang:** UCR EE, 2023–Now (Co-author; Current Ph.D. student at UCR).

- **Soheil Shirvani:** UCR EE, 2023–Now (Co-author; Current Ph.D. student at UCR).
- **Tong Zhang:** UCI CS, 2024–2024 (Co-author; Current Ph.D. student at Fudan Univ.).
- **Junhao Wang:** Tongji Univ. CS, 2024–2024 (Project; Current B.S. student at Tongji Univ.).
- **Tianyi Wang:** UCR ME, 2023–2024 (International Peer Mentorship; Current MS student at UCR).
- **Aritra Samanta:** UCR EE, 2023–2024 (Co-author; Current Ph.D. student at UCR).
- **Fengfan Zhou:** HUST CS, 2023–2023 (Project; Current Ph.D. student at HUST).
- **Shahab Nikkhoo:** UCR EE, 2022–2023 (Co-author; Current M.S. student at UCR).
- **Tao Ren:** Univ. Pittsburgh Information Science, 2022–2023 (Co-author; Current SDE in TikTok).
- **Yifan Yu:** UCR CE, 2022–2023 (Project; Current MS student at UCR).
- **Ao Ding:** SUSTech CSE, 2019–2020 (Co-author; Current M.S. student at SUSTech).
- **Zelin Wang:** SUSTech CSE, 2019–2020 (Project; Current SDE in Meituan).
- **Shuqing Li:** SUSTech CSE, 2019–2020 (Project; Current Ph.D. student at CUHK).

PROPOSAL EXPERIENCE

Proposal Participant May 2025 – September 2025
University of California, Riverside

· Contributed to the NSF CCF Medium collaborative proposal *"Collaborative Research: SHF: Adaptive Hardware–Software Co-Design for Practical On-Device Online Continual Learning"* with UC Irvine. I first helped shape the core idea through detailed discussions with my advisor, Prof. Cong Liu, focusing on how OS- and runtime-driven hardware–software co-design can make online continual learning (OCL) practical on embedded NVIDIA SoCs. Building on these discussions, I led the motivation study and preliminary system analysis that highlight why existing OCL pipelines fail under real-time, memory, and energy constraints on platforms such as Jetson Orin and Xavier, and how concurrent inference–retraining orchestration can address these limitations. In close collaboration with Prof. Nikil Dutt's group at UC Irvine, I worked primarily on Thrust 1, helping to define the problem formulation, propose scheduling and reconfiguration strategies, and align our runtime design with the other thrusts on memory-aware management, adaptive distillation, and cross-layer orchestration. I helped coordinate regular cross-site Zoom meetings, integrated feedback from both teams, and contributed text and figures to the Overview, Intellectual Merit, and Research Plan sections, particularly those describing the runtime layer, embedded robotic testbeds (F1/10 vehicles, agricultural and rescue robots), and the overall OS-driven co-design vision for practical on-device OCL.

INVITED TALKS

Building Robust, Timing-Predictable On-Device Machine Learning Systems
Workshop on Machine-learning enabled safety-critical systems, IEEE Real-Time Systems Symposium (RTSS)
York, United Kingdom. December 2024

DuoJoule: Accurate On-Device Deep Reinforcement Learning for Energy and Timeliness
IEEE Real-Time Systems Symposium (RTSS)
York, United Kingdom. December 2024

R^3: On-device Real-Time Deep Reinforcement Learning for Autonomous Robotics
IEEE Real-Time Systems Symposium (RTSS)
Taipei, China. December 2023

RED: A Systematic Real-Time Scheduling Approach for Robotic Environmental Dynamics
IEEE Real-Time Systems Symposium (RTSS)
Taipei, China. December 2023

On-device Real-Time Deep Reinforcement Learning for Autonomous Robotics
UCR Center for Robotics and Intelligent Systems (CRIS)
Riverside, United States. November 2023

PROFESSIONAL SERVICE

Reviewer for	Association for the Advancement of Artificial Intelligence (AAAI)
	Association for Computational Linguistics (ACL)
	Empirical Methods in Natural Language Processing (EMNLP)
	Conference on Neural Information Processing Systems (NeurIPS)
	International Conference on Learning Representations (ICLR)
	IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
	IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
	IEEE Signal Processing Letters (SPL)
	IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
	ACM Transactions on Design Automation of Electronic Systems (TODAES)
	International Journal of Computer Vision (IJCV)
	Peer-to-Peer Networking and Applications
	Journal of Supercomputing
	International Journal of Machine Learning and Cybernetics
	Scientific Reports
Secondary Reviewer for	IEEE Real-Time Systems Symposium (RTSS)
	IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)
	ACM SIGBED International Conference on Embedded Software (EMSOFT)
	Euromicro Conference on Real-Time Systems (ECRTS)
	International Conference on Neural Information Processing

REFEREES

Cong Liu
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Electrical Engineering Department
University of California, Riverside, USA
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Jian-Jia Chen
Professor
Computer Science Department
Technical University of Dortmund, Germany
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Nikil Dutt IEEE Fellow, ACM Fellow
Distinguished Professor
Department of Computer Science
University of California, Irvine, USA
Email: dutt@uci.edu

Hyoseung Kim
Associate Professor
Electrical and Computer Engineering
University of California, Riverside, USA
Email: hyoseung@ucr.edu