

Xuanzhe Liu

Professor of Computer Science (Boya Distinguished Professor)

School of Computer Science
Institute for Software
Peking University
Beijing, China, 100871
Email: liuxuanzhe@pku.edu.cn
Web: <http://www.liuxuanzhe.com>

Short Bio

Xuanzhe Liu is a Professor (Endowed Boya Distinguished Professor) at the School of Computer Science in Peking University, where he started his faculty career since 2011. His major areas fall in systems software. He now leads the SAAS (Scalable, Adaptive, and Affordable Systems) Lab, trying to help build practical large-scale distributed systems for Web services, cloud, machine learning, etc. He also acts as the deputy director for Institute of Software at Peking University.

He has published over 90 referred papers on prestigious computer-systems related conferences including SOSP/ASPLOS, SIGCOMM/NSDI/MOBICOM/MOBISYS, ICSE/FSE, WWW/SIGMETRICS/IMC, etc., and top-tier journals including TMC, TSE, TOSEM, TSC, etc. He has been recognized by various awards including WWW Best Paper Award, SCIS Five-Year High-Impact Paper Award, WWW Best PC Award, CCF-IEEE Young Scientist Award, IEEE TCSC Award for Excellence (Middle Career Researcher), IEEE TCSVC Rising Star Award, and so on.

He serves as the Associate Editor of IEEE Transactions on Mobile Computing (TMC), ACM Transactions on Intelligent Systems and Technology (TIST), Science China Information Sciences (SCIS), the PC co-chair of IEEE CLOUD 2024, IEEE ICWS 2023, IEEE EDGE 2020, and BlockSys 2021, and regular TPC members of WWW, ICSE, ICDCS, KDD, ICWS, CIKM, and so on. He is a distinguished member of the ACM and the CCF, and a senior member of the IEEE.

个人简历

刘譞哲，北京大学博雅特聘教授（Boya Distinguished Professor），北京大学计算机学院院长聘教授（Full Professor with Tenure）。他是国家杰出青年科学基金获得者，国际计算机学会（ACM）杰出科学家（Distinguished Scientist）。他的研究方向主要为系统软件，聚焦于面向大规模分布式应用（如云计算、大数据、大模型等）的系统度量、设计和实现。

刘教授已经 SOSP/ASPLOS, SIGCOMM/NSDI/MobiCom/MobiSys, ICSE/FSE, WWW/IMC/SIGMETRICS 等学术会议和期刊发表论文 80 余篇，获国际万维网大会 WWW 最佳论文奖（Best Paper Award）、《Science China Information Science》5 年高影响力论文奖（Five-Year High Impact Paper Award）、ICSOC 杰出论文奖（Distinguished Paper Award）等 10 余次国际期刊/会议优秀论文荣誉。曾获国家技术发明一等奖、教育部“青年科学奖”、教育部科技进步一等奖等科技奖励；获 CCF-IEEE CS“青年科学家奖”、IEEE TCSC 可扩展计算职业中期卓越研究奖、IEEE TCSVC 新星奖、北京大学“十佳教师”、北京大学“教学卓越奖”等荣誉。

刘教授主持国家自然科学基金、国家重点研发计划等科研项目 10 余项；担任 IEEE Open Software Services 奖励委员会主席、IEEE Technical Committee on Services Computing（TCSVC）副主席、中国计算机学会服务计算专委会副主任等学术服务；国际期刊 IEEE Transactions on Mobile Computing、ACM Transactions on Intelligent System and Technologies、《中国科学·信息科学》等期刊的 Associate Editor；国际会议 IEEE International CLOUD 2024、IEEE ICWS 2023、IEEE EDGE 2020 等程序委员会主席和 ICSE、WWW、ICDCS 等学术会议程序委员会委员等。

Selected Awards

- National Natural Science Fund for Distinguished Young Scholars, 2023
- Distinguished Paper Award, ICSOC 2023
- ACM Distinguished Member, 2022
- IEEE TCSC Award for Excellence (Middle Career Researcher), 2022
- Best PC Member Award, WWW 2021
- Outstanding Teaching Service Award, Peking University, 2021 (one of the 5 awardees from all PKU faculties)
- Young Scientist Award, Ministry of Education, China, 2020 (one of the 8 winners from all disciplines and the only one from computer science).
- IEEE TCSVC Rising Star Award (the only winner worldwide), 2020
- Best Paper Award, WWW 2019.
- The Most Respected and Esteemed Teacher in Peking University (one of the ten awardees purely voted by PKU students from all PKU faculties), 2019.
- Outstanding Advisor Award for Microsoft Ph.D. Fellows. 2019.
- First-Class National Technical Invention Award. Ministry of Science and Technology, China, 2018.
- CCF-IEEE CS Young Scientist Award. Co-granted by China Computer Federation and IEEE Computer Society, 2018.
- Outstanding Teaching Award Peking University, 2018
- Young Scientist of Yangtze River Program. Ministry of Education, China, 2017.
- Outstanding Advisor Award for Microsoft Ph.D. Fellows. 2017
- Nominee of National Outstanding Doctoral Dissertation Award. Ministry of Education, China, 2011.
- Best Paper Award. 2010 International Conference on Service Science (ICSS 2010).
- Nominee of Best Paper Award. IEEE International Conference on Service-Oriented Computing and Applications (SOCA 2010).
- Best Workshop Paper Award. The 9th International Workshop on Adaptive and Reflective Middleware (ARM 2010).
- Outstanding Doctoral Dissertation Award. China Computer Federation, 2010.
- Best Paper Award. International Conference on Cyber-enabled distributed computing and knowledge discovery (CyberC 2009).
- Nominee of Best Paper Award. Feature Interactions in Telecommunications and Software Systems VIII (ICFI 2005).

Professional Services

- Associate Editor, IEEE Transactions on Mobile Computing (TMC),2022-
- Associate Editor, ACM Transactions on Intelligent Systems and Technologies (TIST), 2020-
- Associate Editor, Journal of Computer Science and Technology (JCST), 2020-
- Associate Editor, Science China Information Sciences (SCIS), 2022-
- Program Committee Co-Chair, IEEE International Conference on Cloud Computing (CLOUD), 2024
- Program Committee Co-Chair, IEEE International Conference on Web Services (ICWS), 2023
- Program Committee Co-Chair, IEEE International Conference on Edge Computing (EDGE), 2020
- Award Committee Co-Chair, IEEE Open Software Services Award Committee, 2022-
- General Co-Chair, the EAI International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom), 2016
- General Co-Chair, International Conference on Blockchain and Trustworthy Systems (BlockSys), 2021
- General Co-Chair, ACM Software Engineering Educators Symposium (SEES), 2014
- Chair, IEEE BigData Hackthon, 2013.
- Publicity Chair, IEEE Technical Committee of Services Computing, 2019-2020
- Area Co-Chair, IEEE International Conference on Web Services (ICWS), 2016/2020
- Area Co-Chair, IEEE International Conference on Mobile Services (MS), 2015
- Chair, Services Society Young Scientists Forum (China), 2015-2016
- Deputy Secretary-in-General, Technical Committee on Services Computing, CCF ,2020
- Secretary-in-Chief, Academic Working Committee of China Computer Federation (CCF), 2014-2016
- Senior PC Member, The Web Conference (WWW), 2023
- PC Members
 - IEEE/ACM International Conference on Software Engineering (ICSE)
 - IEEE International Conference on Distributed Computing Systems (ICDCS)
 - IEEE International Conference on Web Services (ICWS)
 - IEEE/ACM International Conference on Mining Software Repositories (MSR)
 - IEEE International Conference on Services Computing (SCC)
 - IEEE International Conference on Cloud Computing (CLOUD)
 - IEEE International Conference on Service-Oriented Computing and Applications (SOCA)
 - The Web Conference (WWW)
 - ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)
 - ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)
 - International Conference on Service-Oriented Computing (ICSOC)

Selected Publications

Conference Papers

1. [ASPLOS 24] Daliang Xu, Mengwei Xu, Chiheng Lou, Li Zhang, Gang Huang, Xin Jin, **Xuanzhe Liu**. SoCFlow: Efficient and Scalable DNN Training on SoC-Clustered Edge Servers Platform for Distributed Deep Learning. Proceedings of 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems, ASPLOS 2024, April 2024, California, USA.
2. [NSDI 24] Zili Zhang, Fangyue Liu, Gang Huang, Xuanzhe Liu, Xin Jin. Fast Vector Query Processing for Large Datasets Beyond GPU Memory with Reordered Pipelining. Proceedings of 21st USENIX Symposium on Networked Systems Design and Implementation, (NSDI 2024), April 16–18, 2024, Santa Clara CA, USA.
3. [WWW 24] Jinliang Yuan, Shangguang Wang, Hongyu Li, Daliang Xu, Yuanchun Li, Mengwei Xu, **Xuanzhe Liu**. Towards Energy-efficient Federated Learning via INT8-based Training on Mobile DSPs. Proceedings of ACM Web Conference (WWW 2024). MAY 13–17, 2024, Singapore.
4. [SOSP 23a] Sheng Qi, **Xuanzhe Liu**, Xin Jin. Halfmoon: Log-Optimal Fault-Tolerant Stateful Serverless Computing. Proceedings of the 29th ACM Symposium on Operating Systems Principles SOSP 2023, Koblenz, Germany, October 23-26, 2023.
5. [SOSP 23b] Naiqian Zheng, Mengqi Liu, Yuxing Xiang, Ennan Zhai, Linjian Song, Dong Li, Feng Han, Nan Wang, Yong Ma, Zhuo Liang, **Xuanzhe Liu**, Xin Jin. Automated Verification of an In-Production DNS Authoritative Engine. Proceedings of the 29th ACM Symposium on Operating Systems Principles, SOSP 2023, Koblenz, Germany, October 23-26, 2023.
6. [ASPLOS 23a] Diandian Gu, Yihao Zhao, Yinmin Zhong, Yifan Xiong, Zhenhua Han, Peng Cheng, Fan Yang, Gang Huang, Xin Jin, **Xuanzhe Liu**. ElasticFlow: An Elastic Serverless Training Platform for Distributed Deep Learning. Proceedings of 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems, (ASPLOS 2023), pp. 266-280, Vancouver, Canada.
7. [ASPLOS 23b] Junyi Shu, Ruidong Zhu, Gang Huang, Hong Mei, Xuanzhe Liu, Xin Jin. Disaggregated RAID in Modern Data Centers. Proceedings of 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems, (ASPLOS 2023), pp. 147-63, Vancouver, Canada.
8. [SIGCOMM 23a] Yihao Zhao, Xiaoxiang Zhang, Hang Zhu, Ying Zhang, Zhaodong Wang,

Yuandong Tian, Alex Nikulkov, Joao Ferreira, Xuanzhe Liu, Xin Jin. Klotski: Efficient and Safe Network Migration of Large Production Datacenters. Proceedings of the ACM SIGCOMM 2023 Conference, New York City, US, September 10-14, 2023. Accepted to Appear.

9. **[SIGCOMM 23b]** Chao Jin, Zili Zhang, Xingyu Xiang, Songyun Zou, Gang Huang, Xuanzhe Liu, Xin Jin. Ditto: Efficient Serverless Analytics with Elastic Parallelism. Proceedings of the ACM SIGCOMM 2023 Conference, New York City, US, September 10-14, 2023. Accepted to Appear.
10. **[SIGCOMM 23c]** Bingyang Wu, Kun Qian, Bo Li, Yunfei Ma, Qi Zhang, Zhigang Jiang, Jiayu Zhao, Dennis Cai, Ennan Zhai, Xuanzhe Liu, Xin Jin. XRON: A Hybrid Elastic Cloud Overlay Network for Video Conferencing at Planetary Scale. Proceedings of the ACM SIGCOMM 2023 Conference, New York City, US, September 10-14, 2023. Accepted to Appear.
11. **[NSDI 23a]** Bingyang Wu, Zili Zhang, Zhihao Bai, **Xuanzhe Liu**, Xin Jin. Transparent GPU Sharing in Container Clouds for Deep Learning Workloads. Proceedings of 20th USENIX Symposium on Networked Systems Design and Implementation, (**NSDI 2023**), pp. 69-85, APRIL 17–19, 2023 BOSTON, MA, USA, 2023. USENIX Association 2023.
12. **[NSDI 23b]** Zili Zhang, Chao Jin, Linpeng Tang, Xin Jin, **Xuanzhe Liu**. Fast, Approximate Vector Queries on Very Large Unstructured Datasets. Proceedings of 20th USENIX Symposium on Networked Systems Design and Implementation, (**NSDI 2023**), pp. 995-1011, APRIL 17–19, 2023 BOSTON, MA, USA, 2023. USENIX Association 2023.
13. **[NSDI 23c]** Niyun Zhe, Feng Qian, Taide Liu, Yihua Chen, Zhiyao Ma, Jing Wang, Zhongfeng Wang, Gang Huang, **Xuanzhe Liu**, Chenren Xu. Cross-layer Multipath Networking for High-speed Railway. Proceedings of 20th USENIX Symposium on Networked Systems Design and Implementation, (**NSDI 2023**), pp. 1325-1340, APRIL 17–19, 2023 BOSTON, MA, USA, 2023. USENIX Association 2023.
14. **[SIGCOMM 22a]** Naiqian Zheng, Mengqi Liu, Ennan Zhai, Hongqiang Harry Liu, Yifan Li, Kaicheng Yang, **Xuanzhe Liu**, Xin Jin. Meissa: Scalable Network Testing for Programmable Data Planes. Proceedings of the ACM SIGCOMM 2022 Conference, pp. 350-364, August 22-26, 2022, Amsterdam, Netherlands.
15. **[SIGCOMM 22b]** Yihao Zhao, Yuanqiang Liu, Yuanhua Peng, Yibo Zhu, Xin Jin, **Xuanzhe Liu**. Multi-Resource Interleaving for Deep Learning Training. Proceedings of the ACM SIGCOMM 2022 Conference, pp. 428-440, August 22-26, 2022, Amsterdam, Netherlands.

16. **[MobiCom 22]** Daliang Xu, Mengwei Xu, Qipeng Wang, Yun Ma, Shangguang Wang, Gang Huang, Xin Jin, **Xuanzhe Liu**. Mandheling: Mixed-Precision On-Device DNN Training with DSP Offloading. Proceedings of the 28th ACM Conference on Mobile Computing and Networking (**MobiCom**), pp. 214–227, Oct 17-21, 2022, Sydney, Australia.
17. **[MobiSys 22]** Qipeng Wang, Mengwei Xu, Chao Jin, Xinran Dong, Jinliang Yuan, Xin Jin, Gang Huang, Yunxin Liu, **Xuanzhe Liu**. Melon: Breaking the Memory Wall for Resource-Efficient On-Device Machine Learning. Proceedings of the 20th ACM International Conference on Mobile Systems, Applications, and Services, (**MobiSys 2022**), pp. 450-463, June 25-July 1, 2022, Portland, Oregon.
18. **[WWW 22]** Qiyang Zhang, Xiang Li, Xiangying Che, Xiao Ma, Ao Zhou, Mengwei Xu, Shangguang Wang, Yun Ma, **Xuanzhe Liu**. A Comprehensive Benchmark of Deep Learning Libraries on Mobile Devices. Proceedings of the 2022 ACM Web Conference (WWW 2022) , Online, Lyon, France, 25–29 April, 2022.
19. **[SIGMETRICS 22]** Liu Wang, Haoyu Wang, Ren He, Ran Tao, Guozhu Meng, Xiapu Luo, **Xuanzhe Liu**. MalRadar: Demystifying Android Malware in the New Era. Proceedings of the ACM on Measurement and Analysis of Computing Systems (**SIGMETRICS 2022**), pp. 1-27, Volume 6, Issue 2, Article No. 40, June 6-10, 2022, Mumbai, India.
20. **[FSE 22]** Liu Wang, Haoyu Wang, Xiapu Luo, Tao Zhang, Shangguang Wang, **Xuanzhe Liu**. Demystifying "Removed Reviews" in iOS App Store. Proceedings of the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering, ESEC/SIGSOFT FSE 2022, pp. 1489-1499.
21. **[IMC 21]** Mengwei Xu, Zhe Fu, Xiao Ma, Li Zhang, Yanan Li, Feng Qian, Shangguang Wang, Ke Li, Jingyu Yang, **Xuanzhe Liu**. From Cloud to Edge: A First Look at Public Edge Platforms. Proceedings of the 2021 ACM Internet Measurement Conference (**IMC 2021**) , November 2-4 (Virtual Event), pp. 37-53.
22. **[ESEC/FSE 21a]** Chengxu Yang, Yuanchun Li, Mengwei Xu, Zhenpeng Chen, Yunxin Liu, Gang Huang, **Xuanzhe Liu**. TaintStream: Fine-Grained Taint Tracking for Big Data Platforms through Dynamic Code Translation. Proceedings of the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (**ESEC/FSE 2021**). pp. 806-817.
23. **[ESEC/FSE 21b]** Jinfeng Wen, Zhenpeng Chen, Yi Liu, Yiling Lou, Yun Ma, Gang Huang, Xin Jin, **Xuanzhe Liu**. An Empirical Study on Challenges of Application Development in

- Serverless Computing. Proceedings of the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (**ESEC/FSE 2021**). pp. 416-428.
24. [**ICSE 21**] Zhenpeng Chen, Huihan Yao, Yiling Lou, Yanbin Cao, Yuanqiang Liu, Haoyu Wang, **Xuanzhe Liu**. An Empirical Study on Deployment Faults of Deep Learning Based Mobile Applications. Proceedings of the 43rd International Conference on Software Engineering (**ICSE 2021**). pp. 674-685.
 25. [**WWW 21a**] Chengxu Yang, Qipeng Wang, Mengwei Xu, Zhenpeng Chen, Kaigui Bian, Yunxin Liu, **Xuanzhe Liu**. Characterizing Impacts of Heterogeneity in Federated Learning upon Large-Scale Smartphone Data. Proceedings of The World Wide Web Conference, (**WWW 2021**). pp. 935-946.
 26. [**WWW 21b**] Jialiang Han, Yun Ma, Qiaozhu Mei, **Xuanzhe Liu**. DeepRec: On-Device Deep Learning for Privacy-Preserving Sequential Recommendation under GDPR Settings. Proceedings of The World Wide Web Conference, (**WWW 2021**). pp. 900-911.
 27. [**WWW 21c**] Fuqi Lin, Haoyu Wang, Liu Wang, **Xuanzhe Liu**. A Longitudinal Study of Removed Apps in iOS AppStore. Proceedings of The World Wide Web Conference, (**WWW 2021**). pp. 1435-1446.
 28. [**ESEC/FSE 20**] Zhenpeng Chen, Yanbin Cao, Yuanqiang Liu, Haoyu Wang, Tao Xie, **Xuanzhe Liu**. A Comprehensive Study on Challenges in Deploying Deep Learning Based Software. Proceedings of the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (**ESEC/FSE 2020**). pp. 750-762.
 29. [**MobiSys 20**] Mengwei Xu, Xiwen Zhang, Yunxin Liu, Gang Huang, **Xuanzhe Liu**, Felix Xiaozhu Lin. Approximate Query Service on Autonomous IoT Cameras. Proceedings of the 18th ACM International Conference on Mobile Systems, Applications, and Services, (**MobiSys 2020**). pp. 191-205.
 30. [**WWW 19a**] Zhenpeng Chen, Sheng Shen, Ziniu Hu, Xuan Lu, Qiaozhu Mei, **Xuanzhe Liu**. Emoji-Powered Representation Learning for Cross-Lingual Sentiment Classification. Proceedings of The World Wide Web Conference, (**WWW 2019**). pp. 251-262. (*Best Paper Award*)
 31. [**WWW 19b**] Yun Ma, Dongwei Xiang, Shuyu Zheng, Deyu Tian, **Xuanzhe Liu**. Moving Deep Learning into Web Browser: How Far Can We Go? Proceedings of The World Wide Web Conference, (**WWW 2019**). pp. 1234-1244.

32. **[WWW 19c]** Mengwei Xu, Jiawei Liu, Yuanqiang Liu, Felix Xiaozhu Lin, Yunxin Liu, **Xuanzhe Liu**. A First Look at Deep Learning Apps on Smartphones. Proceedings of The World Wide Web Conference, (**WWW 2019**). pp. 2125-2136.
33. **[ICDCS 19]** Gang Huang, Chaoran Luo, Kaidong Wu, Yun Ma, Ying Zhang, **Xuanzhe Liu**. Software-Defined Infrastructure for Decentralized Data Lifecycle Governance: Principled Design and Open Challenges. Proceedings of the 39th IEEE International Conference on Distributed Computing Systems, (**ICDCS 2019**). pp. 1674-1683.
34. **[ESEC/FSE 19]** Zhenpeng Chen, Yanbin Cao, Xuan Lu, Qiaozhu Mei, **Xuanzhe Liu**. SEntiMoji: An Emoji-Powered Learning Approach for Sentiment Analysis in Software Engineering. Proceedings of the ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering, (**ESEC/FSE 2019**). pp. 841-852.
35. **[ICWS 19]** Yi Liu, Enze Xu, Yun Ma, **Xuanzhe Liu**. A First Look at Instant Service Consumption with Quick Apps on Mobile Devices. Proceedings of 2019 IEEE International Conference on Web Services, (**ICWS 2019**), pp. 328-335.
36. **[ICDCS 18]** **Xuanzhe Liu**, Yun Ma, Felix Xiaozhu Lin. Rethinking Resource Management in Mobile Web: Measurement, Deployment, and Runtime. Proceedings of the 38th IEEE International Conference on Distributed Computing Systems, (**ICDCS 2018**). pp. 1347-1356.
37. **[MobiCom 18]** Mengwei Xu, Mengze Zhu, Yunxin Liu, Felix Xiaozhu Lin, **Xuanzhe Liu**. DeepCache: Principled Cache for Mobile Deep Vision. Proceedings of the 24th Annual International Conference on Mobile Computing and Networking, (**MobiCom 2018**). pp. 129-144.
38. **[WWW 18a]** Yun Ma, Ziniu Hu, Yunxin Liu, Tao Xie, **Xuanzhe Liu**. Aladdin: Automating Release of Deep-Link API on Android. Proceedings of the Web Conference, (**WWW 2018**). pp. 1469-1478.
39. **[WWW 18b]** Zhenpeng Chen, Xuan Lu, Wei Ai, Huoran Li, Qiaozhu Mei, **Xuanzhe Liu**. Through a Gender Lens: Learning Usage Patterns of Emojis from Large-Scale Android Users. Proceedings of the Web Conference, (**WWW 2018**). pp. 763-772.
40. **[IMWUT/UbiComp 18]** Mengwei Xu, Feng Qian, Qiaozhu Mei, Kang Huang, **Xuanzhe Liu**. DeepType: On-Device Deep Learning for Input Personalization Service with Minimal Privacy Concern. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies. 2018, 2(4): 197:1-197:26.

41. [WWW 17] Mengwei Xu, Yun Ma, **Xuanzhe Liu**, Xiaozhu Lin, Yunxin Liu. AppHolmes: Detecting and Characterizing App Collusion among Third-Party Android Markets. Proceedings of the 26th International Conference on World Wide Web, (WWW 2017). pp.143-152.
42. [IMWUT/UbiComp 17] Xuan Lu, Zhenpeng Chen, **Xuanzhe Liu**, Huoran Li, Tao Xie, Qiaozhu Mei. PRADO: Predicting App Adoption by Learning the Correlation between Developer-Controllable Properties and User Behaviors. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies. 2017,1(3): 79:1-79:30.
43. [WWW 16] Huoran Li, Wei Ai, **Xuanzhe Liu**, Jian Tang, Gang Huang, Feng Feng, Qiaozhu Mei. Voting with Their Feet: Inferring User Preferences from App Management Activities. Proceedings of 25th International World Wide Web Conference, (WWW 2016). pp.1351-1361.
44. [ICSE 16] Xuan Lu, **Xuanzhe Liu**, Huoran Li, Tao Xie, Dan Hao, Qiaozhu Mei, Gang Huang, Feng Feng. PRADA: Prioritizing Android Devices for Apps by Mining Large-Scale Usage Data. Proceedings of 38th International Conference on Software Engineering, (ICSE 2016). pp.3-13.
45. [UbiComp 16] Xuan Lu, Wei Ai, **Xuanzhe Liu**, Qian Li, Ning Wang, Qiaozhu Mei. Learning from the Ubiquitous Language: An Empirical Analysis of Emoji Usage of Smartphone Users. Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing, (UbiComp 2016). pp. 770-780.
46. [WWW 2015] Yun Ma, **Xuanzhe Liu**, Shuhui Zhang, Ruirui Xiang, Yunxin Liu, Tao Xie. Measurement and Analysis of Mobile Web Cache Performance. Proceedings of the 24th International Conference on World Wide Web, (WWW 2015). pp.691-701.
47. [IMC 2015] Huoran Li, Xuan Lu, **Xuanzhe Liu**, Tao Xie, Kaigui Bian, Xiaozhu Lin, Qiaozhu Mei, Feng Feng. Characterizing Smartphone Usage Patterns from Millions of Android Users. Proceedings of the 2015 ACM Conference on Internet Measurement Conference, (IMC 2015). pp.459-472.

Journal Articles

48. [TOSEM 23a] **Xuanzhe Liu**, Diandian Gu, Zhenpeng Chen, Jinfeng Wen, Zili Zhang, Yun Ma, Haoyu Wang, Xin Jin. Rise of Distributed Deep Learning Training in the Big Model Era: A Software Engineering Perspective. ACM Transactions on Software Engineering and

Methodology (TOSEM). 2023.

49. **[TOSEM 23b] Xuanzhe Liu**, Chengxu Yang, Ding Li, Yuhan Zhou, Shaofei Li, Jiali Chen, Zhenpeng Chen. Adonis: Practical Control Flow Recovery through OS-Level Traces. ACM Transactions on Software Engineering and Methodology (TOSEM). 2023.
50. **[TOSEM 23c]** Yixuan Zhang, Shangdong Cao, Haoyu Wang, Zhenpeng Chen, Xiapu Luo, Dongliang Mu, Yun Ma, Gang Huang, **Xuanzhe Liu**. Characterizing and Detecting WebAssembly Runtime Bugs. ACM Transactions on Software Engineering and Methodology (TOSEM). 2023.
51. **[TOSEM 22b] Xuanzhe Liu**, Jinfeng Wen, Ding Li, Junkai Chen, Yi Liu, Zhenpeng Chen, Xin Jin. FaaSLight: General Cold-Start Latency Optimization for Function-as-a-Service in Serverless Computing. ACM Transactions on Software Engineering and Methodology (TOSEM), Volume 32, Issue 5, Article No.:119, pp 1–29.
52. **[TOSEM 22a]** Jinfeng Wen, Zhenpeng Chen, Xin Jin, **Xuanzhe Liu**. Rise of the Planet of Serverless Computing: a Systematic Review. ACM Transactions on Software Engineering and Methodology (TOSEM), Volume 32, Issue 5, Article No.: 131, pp 1–61.
53. **[TMC 22d]** Chengxu Yang, Mengwei Xu, Qipeng Wang, Zhenpeng Chen, Kaigui Bian, Kang Huang, Yun Ma, Gang Huang, Xin Jin, **Xuanzhe Liu**. FLASH: Heterogeneity-Aware Federated Learning at Scale. IEEE Transactions on Mobile Computing (TMC), accepted to appear.
54. **[TMC 22c]** Huoran Li, Fuqi Lin, Xuan Lu, Jun Zhang, Gang Huang, Qiaozhu Mei, **Xuanzhe Liu**. Systematic Analysis of Fine-Grained Mobility Prediction with On-Device Contextual Data. IEEE Transactions on Mobile Computing (TMC). 2022, 31(3),1096-1109.
55. **[Science China 22]** Yi Liu, Yun Ma, Xusheng Xiao, Tao Xie, **Xuanzhe Liu**. LegoDroid: Flexible Android Apps Decomposition and Instant Installation. Science China Information Sciences. Accepted to appear.
56. **[TOSEM 21]** Zhenpeng Chen, Yanbin Cao, Huihan Yao, Xuan Lu, Xin Peng, Hong Mei, **Xuanzhe Liu**. Emoji-Powered Sentiment and Emotion Detection from Software Developers' Communication Data. ACM Transactions on Software Engineering and Methodology (TOSEM). 2021, 30(2): 18:1-18:48.
57. **[TMC 21]** Deyu Tian, Yun Ma, Aruna Balasubramanian, Yunxin Liu, Gang Huang, Xuanzhe Liu. Characterizing Embedded Web Browsing in Mobile Apps. IEEE Transactions on Mobile Computing (TMC). Accepted to appear.

58. **[TOIT 21] Xuanzhe Liu**, Shanguang Wang, Yun Ma, Qiaozhu Mei, Ying Zhang, Yunxin Liu, Gang Huang. Operating Systems for Resource-Adaptive Intelligent Software: Challenges and Opportunities. *ACM Transactions on Internet Technology (TOIT)*. Vision Paper. 2021, 21(2): 27:1-27:19.
59. **[TMC 20a] Mengwei Xu, Feng Qian, Mengze Zhu, Feifan Huang, Saumay Pushp, Xuanzhe Liu**. DeepWear: Adaptive Local Offloading for On-Wearable Deep Learning. *IEEE Transactions on Mobile Computing (TMC)*. 2020, 19(2): 314-330.
60. **[TSC 20] Xuanzhe Liu**, Sam Xun Sun, Gang Huang. Decentralized Services Computing Paradigm for Blockchain-Based Data Governance: Programmability, Interoperability, and Intelligence. *IEEE Transactions on Services Computing (TSC)*. 2020, 13(2): 343-355.
61. **[TSC 19a] Gang Huang, Xuanzhe Liu**, Yun Ma, Xuan Lu, Ying Zhang, Yingfei Xiong. Programming Situational Mobile Web Applications with Cloud-Mobile Convergence: An Internetware-Oriented Approach. *IEEE Transactions on Services Computing (TSC)*. 2019, 12(1): 6-19.
62. **[TSC 19b] Xuanzhe Liu**, Mengwei Xu, Teng Teng, Gang Huang, Hong Mei. MUIT: A Domain-Specific Language and its Middleware for Adaptive Mobile Web-based User Interfaces in WS-BPEL. *IEEE Transactions on Service Computing (TSC)*. 2019, 12(6): 955-969.
63. **[TMC 18] Yun Ma, Xuanzhe Liu**, Yi Liu, Yunxin Liu, Gang Huang. A Tale of Two Fashions: An Empirical Study on the Performance of Native Apps and Web Apps on Android. *IEEE Transactions on Mobile Computing (TMC)*. 2018, 17(5): 990-1003.
64. **[TSE 18] Xuanzhe Liu**, Huoran Li, Xuan Lu, Tao Xie, Qiaozhu Mei, Feng Feng, Hong Mei. Understanding Diverse Usage Patterns from Large-Scale Appstore-Service Profiles. *IEEE Transactions on Software Engineering (TSE)*. 2018, 44(4): 384-411. **(Featured as a Spotlight Paper)**
65. **[TOIT 18] Xuanzhe Liu**, Meihua Yu, Yun Ma, Gang Huang, Hong Mei, Yunxin Liu. i-Jacob: An Internetware-Oriented Approach to Optimizing Computation-Intensive Mobile Web Browsing. *ACM Transactions on Internet Technology (TOIT)*. 2018, 18(2): 14:1-14:23.
66. **[TMC 17a] Xuanzhe Liu**, Yun Ma, Xinyang Wang, Yunxin Liu, Tao Xie, Gang Huang. SWAROVsky: Optimizing Resource Loading for Mobile Web Browsing. *IEEE Transactions on Mobile Computing (TMC)*. 2017, 16(10): 2941-2954. **(Featured as a Spotlight Paper)**
67. **[TMC 17b] Xuanzhe Liu**, Yun Ma, Shuailiang Dong, Yunxin Liu, Tao Xie, Gang Huang.

- ReWAP: Reducing Redundant Transfers for Mobile Web Browsing via App-Specific Resource Packaging. *IEEE Transactions on Mobile Computing (TMC)*. 2017, 16(9): 2625-2638.
68. **[TMC 17c]** Gang Huang, Mengwei Xu, Xiaozhu Lin, Yunxin Liu, Yun Ma, Saumay Pushp, **Xuanzhe Liu**. ShuffleDog: Characterizing and Adapting User-Perceived Latency of Android Apps. *IEEE Transactions on Mobile Computing (TMC)*. 2017, 16(10): 2913-2926.
69. **[TOIS 17]** **Xuanzhe Liu**, Wei Ai, Huoran Li, Jian Tang, Gang Huang, Feng Feng, Qiaozhu Mei. Deriving User Preferences of Mobile Apps from Their Management Activities. *ACM Transactions on Information Systems (TOIS)*. 2017, 35(4): 39:1-39:32.
70. **[TMC 16]** **Xuanzhe Liu**, Yun Ma, Yunxin Liu, Gang Huang. Demystifying the Imperfect Client-Side Cache Performance of Mobile Web Browsing. *IEEE Transactions on Mobile Computing (TMC)*. 2016, 15(9): 2206-2220.

Selected Invited Talks

[Keynote Talk] Pathway to Next-Generation Service-Based Intelligent Software Systems. *IEEE EDGE 2021*.

[Keynote Talk] From Centralization to Decentralization: A Service-Based Perspective to Cloud-Edge-Mobile Distributed Systems at Scale. *IEEE SAGC 2020*.

[Keynote Talk] Software-Defined Service-Oriented Web Systems. *IEEE ICSESS 2017*.