

Mengwei Xu (徐梦炜)

Assistant Professor, Doctoral Advisor

CS Department, Beijing University of Posts and Telecommunications (BUPT)

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Research Interests

Computer systems, mobile computing, edge computing.

Recent focus: AI on mobile/edge devices like smartphones and IoTs.

Education

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|-------------------|---|
| 09/2015 – 07/2020 | PhD in Computer Science , Peking University <ul style="list-style-type: none">• Advisor: Prof. Gang Huang, Prof. Xuanzhe Liu |
| 09/2011 – 07/2015 | BS in Computer Science , Peking University |

Employment & Experience

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|-------------------|---|
| 07/2020 – present | Assistant Professor , BUPT |
| 12/2020 – 03/2021 | “Star-track” Visiting Scholar , Microsoft Research Asia <ul style="list-style-type: none">• Mentor: Dr. Yunxin Liu |
| 11/2018 – 11/2019 | Visiting Scholar , Purdue University <ul style="list-style-type: none">• Advisor: Prof. Felix Xiaozhu Lin |
| 03/2015 – 03/2016 | Research Intern , Microsoft Research Asia <ul style="list-style-type: none">• Mentor: Dr. Yunxin Liu |

Honors & Awards

- Outstanding Graduate of Beijing, 2020/2015
- Outstanding Graduate of Peking University, 2020/2015
- National Scholarship (Ministry of Education, China), 2017/18
- Presidential Scholarship (Peking University), 2015/16/17/19

Conference Proceedings (*=co-primary)

[1] “From Cloud to Edge: A First Look at Public Edge Platforms”

Mengwei Xu, Zhe Fu, Xiao Ma, Li Zhang, Yanan Li, Feng Qian, Shangguang Wang, Ke Li, Jingyu Yang, Xuanzhe Liu, in *the Internet Measurement Conference (IMC)*, acceptance rate 28.1% (55/196), 2021. Accepted to appear

[2] “Video Analytics with Zero-Streaming Cameras”

- Mengwei Xu***, Tiantu Xu*, Yunxin Liu, and Felix Xiaozhu Lin, in USENIX Annual Technical Conference (**USENIX ATC**), pages 459-472, acceptance rate 18.8% (64/341), 2021.
- [3] “TaintStream: Fine-grained Taint Tracking for Big Data Platforms through Dynamic Code Translation”
Chengxu Yang, Yuanchun Li, **Mengwei Xu**, Zhenpeng Chen, Yunxin Liu, Gang Huang, Xuanzhe Liu, in *The ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, pages 806-817, acceptance rate 24.5% (97/396), 2021.
- [4] “Boosting Mobile CNN Inference through Semantic Memory”
Yun Li, Chen Zhang, Shihao Han, Li Lina Zhang, Baoqun Yin, Yunxin Liu, **Mengwei Xu**, in *The ACM Multimedia (MM)*, acceptance rate 27.9% (542/1942), 2021.
- [5] “Characterizing Impacts of Heterogeneity in Federated Learning upon Large-Scale Smartphone Data”
Chengxu Yang, Qipeng Wang, **Mengwei Xu**, Shangguang Wang, Kaigui Bian, Xuanzhe Liu, in *The Web Conference (WWW)*, pages 935-946, acceptance rate 20.6% (357/1736), 2021.
- [6] “Approximate Query Service on Autonomous IoT Cameras”
Mengwei Xu, Xiwen Zhang, Yunxin Liu, Xuanzhe Liu, and Felix Xiaozhu Lin, in *Proc. ACM Int. Conf. Mobile Systems, Applications and Services (MobiSys)*, pages 191-205, acceptance rate 19% (34/175), 2020.
- [7] “A First Look at Deep Learning Apps on Smartphones”
Mengwei Xu, Jiawei Liu, Yuanqiang Liu, Felix Xiaozhu Lin, Yunxin Liu, and Xuanzhe Liu, in *Proc. the World Wide Web Conference (WWW)*, pages 2125–2136, acceptance rate 18% (225/1247), 2019.
- [8] “DeepType: On-Device Deep Learning for Input Personalization Service with Minimal Privacy Concern”
Mengwei Xu, Feng Qian, Qiaozhu Mei, Kang Huang, and Xuanzhe Liu. in *Proc. the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, pages 4:1-4:26, 2018.
- [9] “DeepCache: Principled Cache for Mobile Deep Vision”
Mengwei Xu, Mengze Zhu, Yunxin Liu, Felix Xiaozhu Lin, and Xuanzhe Liu, in *Proc. ACM Int. Conf. Mobile Computing and Networking (MobiCom)*, pages 129–144, acceptance rate 22% (42/187), 2018.
- [10] “PrivacyShield: A Mobile System for Supporting Subtle Just-in-time Privacy Provisioning through Off-Screen-based Touch Gestures”
Saumay Pushp, Yunxin Liu, **Mengwei Xu**, Changyoung Koh, and Junehwa Song. in *Proc. the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, pages 2:1-2:38, 2018.
- [11] “Power SandBox: Power Awareness Redefined”
Liwei Guo*, Tiantu Xu*, **Mengwei Xu**, Xuanzhe Liu, and Felix Xiaozhu Lin, in *Proc. European Conference on Computer Systems (EuroSys)*, pages 37:1–37:15, acceptance rate 16%

(43/262), 2018.

- [12] “AppHolmes: Detecting and Characterizing App Collusion among Third-Party Android Markets”

Mengwei Xu, Yun Ma, Xuanzhe Liu, Felix Xiaozhu Lin, and Yunxin Liu, in *Proc. the World Wide Web Conference (WWW)*, pages 143–152, acceptance rate 17% (164/966), 2017.

Journal Publications

- [1] “Autonomous Learning System towards Mobile Intelligence”

Mengwei Xu, Yuanqiang Liu, Kang Huang, Xuanzhe Liu, and Gang Huang, in *Journal of Software (JoS*, in Chinese), 2020.

- [2] “DeepWear: Adaptive Local Offloading for On-Wearable Deep Learning”

Mengwei Xu, Feng Qian, Mengze Zhu, Feifan Huang, Saumay Pushp, and Xuanzhe Liu, in *IEEE Transactions on Mobile Computing (TMC)*, 19(2), pages 314-330, 2019.

- [3] “ShuffleDog: Characterizing and Adapting User-Perceived Latency of Android Apps”

Gang Huang, **Mengwei Xu**, Felix Xiaozhu Lin, Yunxin Liu, Yun Ma, Saumay Pushp, and Xuanzhe Liu, in *IEEE Transactions on Mobile Computing (TMC)*, 16(10), pages 2913–2926, 2017.

- [4] “MUIT: A Domain-Specific Language and its Middleware for Adaptive Mobile Web- based User Interfaces in WS-BPEL”

Xuanzhe Liu, **Mengwei Xu**, Teng Teng, Gang Huang, and Hong Mei, in *IEEE Transactions on Services Computing (TSC)*, 2016.

Workshop Publications

- [1] “Towards Ubiquitous Learning: A First Measurement of On-Device Training Performance”

Dongqi Cai, Qipeng Wang, Yuanqiang Liu, Yunxin Liu, Shangguang Wang, **Mengwei Xu**. The *International Workshop on Embedded and Mobile Deep Learning (EMDL)*, co-located with MobiSys 2021.

Under Review

- [1] “Neural Architecture Search over Decentralized Data”

Mengwei Xu, Yuxin Zhao, Kaigui Bian, Gang Huang, Xuanzhe Liu, in (arXiv: 2002.06352).

- [2] “Heterogeneity-Aware Federated Learning”

Chengxu Yang, Qipeng Wang, **Mengwei Xu**, Shangguang Wang, Kaigui Bian, Xuanzhe Liu, in (arXiv:2006.06983).

Academic Services

- **Vice Program Chair**
IEEE SAGC 2021;

- **Session Chair**
IEEE CLOUD 2021;
- **TPC Member**
ICDCS 2021, BigCom 2021, MobiArch@MobiCom 2021, ICWS 2021;
MobiSys'19 Rising Stars Forum;
- **(External) Reviewer**
IMWUT, TMC, TSC, TIST, etc.

Teaching

- TA, Operating System Practice, Undergraduates, PKU (Spring 2017; Fall 2016).
- TA, Distributed Machine Learning Systems, Graduates, PKU (Fall 2019).
- TA, Introduction to Computing, Undergraduates, PKU (Fall 2016; Fall 2014).
- TA, Foundations of Computer Application, Undergraduates, PKU (Spring 2015).