

UMAR FAROOQ

Software Engineer – Compiler Infrastructure
ByteDance/TikTok Inc, Mountain View, CA

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RESEARCH INTERESTS

My primary research lies in the area of programming languages and software engineering, with a focus on analyzing and solving practical issues in the development of mobile applications. In addition, I have developed systems that exploit the synergy between software engineering and emerging techniques (in Big Data and Deep Learning) to address issues in both research areas.

PROFESSIONAL EXPERIENCE

- **ByteDance/TikTok Inc.** Mountain View, CA
Software Engineer – Compiler Infrastructure Nov. 2021 - Current
- **University of California, Riverside** Riverside, CA
Graduate Researcher Sept. 2016 - Oct. 2021

EDUCATION

- **University of California, Riverside (UCR)** Riverside, CA
Ph.D. in Computer Science & Engineering Fall 2016 – Fall 2021
Dissertation: Runtime, Analysis, and Tools for Reliable Management of Mobile App States.
Committee: Zhijia Zhao (advisor), Rajiv Gupta, Nael Abu-Ghazaleh, Manu Sridharan, and Zhiyun Qian.
- **Virtual University of Pakistan (VU)** Lahore, Pakistan
Bachelor of Science in Computer Science Sept. 2008 – Aug. 2012

AWARDS & HONORS

- **ACM SIGMOBILE Research Highlights:** Awarded in 2018 for MobiSys'18 paper.
- **Best Paper Runner-up Award:** At MobiSys'18 for RuntimeDroid paper.
- **Dean's Fellowship Award:** At the University of California Riverside for 2017-2018.
- **NSF Travel Grant Awards:** ASPLOS'18, MobiSys'18.
- **University Merit Scholarship:** Awarded to top-3 ranked students for 2010-12 academic years at Virtual University.

SELECTED PUBLICATIONS

<https://www.cs.ucr.edu/~ufaro001/publications>

- SIGIR '23** **MobileRec: A Large-Scale Dataset for Mobile Apps Recommendation.**
M.H. Maqbool, Umar Farooq, Adib Mosharrof, A.B. Siddique, and Hassan Foroosh, "MobileRec: A Large-Scale Dataset for Mobile Apps Recommendation," In Proceedings of the 46th ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR'23), 10 pages, *To Appear*. [Full Paper, Resource Track]
- AST '23** **Detecting Potential User-data Save & Export Losses due to Android App Termination.**
Sydur Rahaman, Umar Farooq, Iulian Neamtiu and Zhijia Zhao, "Detecting Potential User-data Save & Export Losses due to Android App Termination," In Proceedings of the 4th ACM/IEEE International Conference on Automation of Software Test (AST 2023), 11 pages, *To Appear*. [Full Paper, Research Track]
- CC '23** **Linker Code Size Optimization for Native Mobile Applications.**
Gai Liu, Umar Farooq, Chengyan Zhao, Xia Liu and Nian Sun, "Linker Code Size Optimization for Native Mobile Applications," In Proceedings of the 32nd ACM SIGPLAN International Conference on Compiler Construction, 2023 (CC'23), pp. 168–179, DOI: <https://doi.org/10.1145/3578360.3580256>. [Full Paper, Research Track]
- BIGDATA '22** **Proactive Prioritization of App Issues via Contrastive Learning.**
Moghis Fereidouni, Adib Mosharrof, Umar Farooq and A.B. Siddique, "Proactive Prioritization of App Issues via Contrastive Learning," In Proceedings of the 2022 IEEE International Conference on Big Data (Big Data), 2022, pp. 535-544, DOI: <https://doi.org/10.1109/BigData55660.2022.10020586>. [Full Paper, Research Track, Acceptance Rate: 19.2%] 🔄

- BIGDATA '20** **App-Aware Response Synthesis for User Reviews.**
Umar Farooq, A.B. Siddique, Fuad Jamour, Zahijia Zhao and Vagelis Hristidis, "App-Aware Response Synthesis for User Reviews," 2020 IEEE International Conference on Big Data (Big Data), 2020, pp. 699-708, DOI: <https://doi.org/10.1109/BigData50022.2020.9377983>. [Full Paper, Research Track, Acceptance Rate: 15.5%] 
- OOPSLA '20** **LiveDroid: Identifying and Preserving Mobile App State in Volatile Runtime Environments.**
Umar Farooq, Zhijia Zhao, Manu Sridharan and Iulian Neamtiu, "LiveDroid: Identifying and Preserving Mobile App State in Volatile Runtime Environments," 2020 Proc. ACM Program. Lang. 4, OOPSLA, Article 160 (November 2020), 30 pages, DOI: <https://doi.org/10.1145/3428228>. [Full Paper, Research Track] 
- GETMOBILE** **RuntimeDroid: Restarting-Free Runtime Change Handling for Android Apps.**
Umar Farooq and Zhijia Zhao, "RuntimeDroid: Restarting-Free Runtime Change Handling for Android Apps," 2019 GetMobile: Mobile Computing and Communications 22, 4, 25-29, DOI: <https://doi.org/10.1145/3325867.3325879>. [Invited short article]
- ASPLOS '19** **Scalable Processing of Contemporary Semi-Structured Data on Commodity Parallel Processors – A Compilation-based Approach.**
Lin Jiang, Xiaofan Sun, Umar Farooq and Zhijia Zhao, "Scalable Processing of Contemporary Semi-Structured Data on Commodity Parallel Processors – A Compilation-based Approach," 2019 In Proceedings of the Twenty-Fourth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS '19). Association for Computing Machinery, New York, NY, USA, 79-92, DOI: <https://doi.org/10.1145/3297858.3304008>. [Full Paper, Research Track, Acceptance Rate: 21.1%] 
- MOBISYS '18** **RuntimeDroid: Restarting-Free Runtime Change Handling for Android Apps.**
 Umar Farooq and Zhijia Zhao, "RuntimeDroid: Restarting-Free Runtime Change Handling for Android Apps," 2018 In Proceedings of the 16th Annual International Conference on Mobile Systems, Applications, and Services (MobiSys '18). Association for Computing Machinery, New York, NY, USA, 110-122, DOI: <https://doi.org/10.1145/3210240.3210327>. [Full Paper, Research Track] [Best Paper Runner-up Award, and ACM SIGMOBILE Research Highlights] 

TEACHING EXPERIENCE

- **Introduction to Software Engineering (CS 180)** UC Riverside, CA
Teaching Assistant, Instructor(s): Prof. Zhijia Zhao, Prof. Manu Sridharan Fall '18, '20, Spring '19, '20, '21
 - Instructed the lab sections and developed mobile/web-based course projects
- **Project in Compilers (CS 179E)** UC Riverside, CA
Teaching Assistant, Instructor: Prof. Mohsen Lesani Winter '21
 - Instructed the lab sections and developed compiler projects
- **Compiler Construction (CS 201)** UC Riverside, CA
Teaching Assistant, Instructor: Prof. Zhijia Zhao Winter 2019
 - Developed Soot and LLVM-based course projects for implementing program analyses
- **Android Applications: Design and Development** Moreno Valley, CA
Instructor Nov. 2016, Sept. 2017
 - Teachers Training Program at Moreno Valley Unified School District (MVUSD)
- **Android Applications Development** Lahore, Pakistan
Instructor Summer 2012
 - Lectured undergraduate-level classes at Virtual University of Pakistan

OUTREACH

- **K-12 Computer Science AP Course Development** at Moreno Valley Unified School District (MVUSD)
- **Mobile App Development Training for K-12 Teachers** at Moreno Valley Unified School District (MVUSD)

PROFESSIONAL SERVICES

- **Artifact Evaluation Committee**, The European Conference on Computer Systems (EuroSys'22).
- **Artifact Evaluation Committee**, ACM Symposium on Operating Systems Principles (SOSP'21).
- **External Reviewer**, ACM/IEEE International Symposium on Code Generation and Optimization (CGO'21).
- **Program Committee**, ACM Student Research Competition at SPLASH 2021.
- **Artifact Evaluation Committee**, USENIX Symposium on Operating Systems Design and Implementation (OSDI'21).
- **Program Committee**, International Conference on Code Quality (ICCCQ'21).
- **Artifact Evaluation Committee**, International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS'21).
- **Artifact Evaluation Committee**, ACM International Conference on Compiler Construction (CC'21).

REFERENCES

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