Dezhi Ran

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Education

- **Turing Class, Peking University** — Beijing, China
  Bachelor of Computer Science with Summa Cum Laude; GPA: 3.84, Rank 3/30 — *September 2017 - July 2021*
- **School of Computer Science, Peking University** — Beijing, China
  Ph.D. Student of Computer Science — *September 2021 - July 2026 (**expected**)*

Experiences

- **Huawei Cloud** — Onsite
  Research Intern — *Mar 2022 - Present (Sep 2022 expected)*
  - **Software Engineering & Program Analysis**: Develop code generation techniques with pretrained language models
- **Alibaba Group** — Onsite
  Research Intern with Two Annual Outstanding Intern Awards — *Jul 2020 - Mar 2022*
  - **Robotic E2E Testing**: Develop automated visual testing systems with robotic infrastructure support.
  - **Computer Vision**: Develop fast and accurate UI element identification techniques supporting automated visual testing.
  - **Reinforcement Learning**: Develop efficient reinforcement learning algorithms tailored for software testing.
- **Peking University** — Remote
  Teaching Assistant — *Feb 2020 - Jun 2020*
  - **TA for Algorithm Design and Analysis**: Course project assessment for algorithm design and analysis.
  - **Introduction to Reinforcement Learning**: Instruct course materials and design the term project.
- **Peking University** — Onsite
  Research Assistant with an Outstanding Undergrad Research Award — *Feb 2020 - Jun 2020*
  - **Short Video Streaming Optimization**: Characterize and Develop joint optimization framework for short video recommendation, streaming, and preloading at network edge.
  - **Algorithmic Game Theory**: Characterize the in-feed ad bidding among short video platforms, advertisers, and influencers. Design a first-price auction mechanism for real-time advertisement bidding with online optimum guarantee.

Projects

- **Automatically Generating Data Generators with PTMS (Deep Learning, Code Generation, Program Synthesis, Software Testing)**: Working project. Evaluate pretrained language models for test code generation.(May '22 - present)
- **Effective Automated GUI testing with Multi-Armed Bandits (GUI Testing, Bandit Algorithms)**: Develop exploration strategies for automated GUI testing with guaranteed exploration effectiveness. One conference paper submitted to ASE 2022, under double-blind review.(December '21 - March '22)
- **Rigorous Analysis of Automated UI Testing Effectiveness (Probabilistic Methods, Random Testing, GUI Testing)**: Develop theoretical frameworks to characterize and improve the test effectiveness of randomized UI testing with probabilistic methods. One journal-first paper to submit. (June '21 - September '21)
- **Mobile App Adaptation for Elderly Users (Human-Computer Interaction, Accessibility, Mobile Apps)**: Propose guidelines based on empirical investigations and report industrial experiences of adapting mobile apps for elderly users. One article submitted to IEEE Software. (July '21 - November '21)
- **Automated Visual Testing for Industrial Apps (GUI Testing, Robotic Testing, Computer Vision)**: Develop UI-element identification techniques and hardware infrastructure support for automated visual testing. One paper accepted by ICSE-SEIP 2022.(July '20 - June '21)
- **Bluetooth Indoor Localization for Covid-19 Patient Close Contact Detection and Tracing (Indoor Localization, RSSI)**: Develop indoor localization algorithms using trilateration and RSSI to identify and trace people who are close contact to Covid-19 patients.(March '20 - April '20)
- **Preference-Aware Short Video Preloading (Recommender Systems, Edge Computing)**: Develop Two-stage schema actively preloading short videos that are likely to be viewed at network edge to improve quality of user experience and reduce network congestion. One conference paper accepted by IEEE CLOUD 2020. (January '20- March '20)
- **Optimal auction mechanism design for in-feed short video advertisements. (Badge Design, Auction Design, Algorithmic Game Theory, Competitive Ratio Analysis)**: Model of the interplay among short video platforms, advertisers and influencers to jointly maximize advertising profit and long-term user traffic bonus; An online optimal first-price bidding algorithm. One conference paper accepted by AAMAS 2022. (September'19- January '20)
- **Joint Optimization of Short Video Streaming and Recommendation (Reinforcement Learning, Recommender Systems, Adaptive Bitrate Streaming)**: Model the interplay between short video streaming and recomendation; Develop a joint optimization framework of short video and streaming with RL and session-based recommender systems. One conference paper accepted by IEEE MSN 2020. (March '19- August '19)

Publications

First-Author Publications

- **Automated Visual Testing for Mobile Apps in an Industrial Setting**: **Dezhi Ran**, Zongyang Li, Chenxu Liu, Wenyu Wang, Weizhi Meng, Xionglin Wu, Hui Jin, Jing Cui, Xing Tang, Tao Xie. IEEE/ACM 44th International Conference on Software Engineering: Software Engineering in Practice (ICSE-SEIP 2022, CCF-A).
- **Revenue and User Traffic Maximization in Mobile Short-Video Advertising**: **Dezhi Ran***, Weiqiang Zheng*, Yunqi Li, Kaigui Bian, Jie Zhang, Xiaotie Deng. 21st International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2022, CCF-B).
- **SSR: Joint Optimization of Recommendation and Adaptive Bitrate Streaming for Short-form Video Feed**: **Dezhi Ran**, Yuanxing Zhang, Wenhan Zhang, Kaigui Bian. IEEE 16th International Conference on Mobility, Sensing and Networking (MSN 2020, CCF-C).
- **CFP: A Cross-layer Recommender System with Fine-grained Preloading for Short Video Streaming at Network Edge**: **Dezhi Ran**, Yuanxing Zhang, Ye Yuan, Kaigui Bian. IEEE 13th International Conference on Cloud Computing (CLOUD 2020, CCF-C, acceptance rate 20.7%).

Other Publications

- **Automated Assertion Generation via Information Retrieval and Its Integration with Deep Learning**: Hao Yu, Yiling Lou, Ke Sun, **Dezhi Ran**, Tao Xie, Dan Hao, Ying Li, Ge Li, Qianxiang Wang, IEEE/ACM 44th International Conference on Software Engineering (ICSE 2022, CCF-A).

Honors and Awards

- Invited Assistant Instructor, Tencent - Jun 2022 (3 in computer science, nationwide)
- Outstanding Research Intern, Alibaba Group - Mar 2022 (13 from all interns in Alibaba Group, worldwide)
- Elite Collegiate Award, CCF - Oct 2021 (94 in computer science nationwide; 4 in Peking University)
- Outstanding Undergraduate Thesis,Peking University - Jun 2022
- Weiming Scholar, Peking University - Jun 2021 (7 in computer science; 50 in Peking University)
- Outstanding Undergraduate Researcher Award, Peking University - Jun 2021 (7 in computer science, EECS)
- Outstanding Research Intern, Alibaba Group - Mar 2021
- Huawei Scholarship, Huawei Technologies Co., Ltd - Dec 2020(10 in computer science, Peking University)
- National Scholarship, Ministry of Education, China - Dec 2020 (7 in EECS)
- Merit Student, Peking University - Dec 2020
- John Hopcroft Scholarship, Peking University - Dec 2019
- GuangHua Scholarship, Peking University - Dec 2018
- Merit Student, Peking University - Dec 2018
- Provincial Outstanding Student - Feb 2017 (140 from all high school students in Shandong Province)
- Provincial Merit Student - Feb 2017 (140 from all high school students in Shandong Province)

Services

- **Invited Reviewer**
  IEEE Transactions on Vehicular Technology (TVT), Software Testing, Verification and Reliability (STVR)
- **Sub-Reviewer**
  FSE2021, ICSE-SEIP2022, ASE2022