

# CHAO PENG

ByteDance, Dazhongsi Square, Haidian District, Beijing, China

chao.peng@acm.org

## EDUCATION

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**University of Edinburgh**

**Edinburgh, UK**

**PhD in Informatics (Software Engineering)**

September 2017 - November 2021

Supervised by Dr. Ajitha Rajan

- Fully funded by the School of Informatics Scholarship
- Research fields:
  - Coverage metrics and test case generation for GPU programs,
  - Program analysis of smart contracts,
  - Android GUI testing.

**University of Edinburgh**

**Edinburgh, UK**

**MSc in High Performance Computing with Data Science**

September 2016 - August 2017

- Thesis: FEniCS Performance Investigation and Porting miniDFT to GPU Clusters
- Received Achievement Award of the 6th Annual HPCAC Student Cluster Competition

**Xuzhou University of Technology**

**Xuzhou, China**

**BSc in Computer Science and Technology**

September 2012 - June 2016

- Awarded  $2 \times$  National Scholarship by Ministry of Education of China
- Awarded National Encouragement Scholarship by Department of Education of Jiangsu Province
- Awarded Honored Undergraduate of Xuzhou University of Technology
- President of the Student Union of School of Information & Electrical Engineering

## WORK EXPERIENCE

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**ByteDance**

05 Jul 2021 - Present

*Software Engineering Lab*

*Beijing, China*

- Position: Tech Expert / Senior Researcher

**Fudan University**

02 Mar 2022 - Present

*School of Computer Science*

*Shanghai, China*

- Position: Part-time Postgraduate Student Mentor

## INTERNSHIP EXPERIENCE

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**Huawei Edinburgh Research Centre**

23/11/2020 - 22/06/2021

*Programming Languages Lab, 2021 Laboratories*

*Edinburgh, UK*

- Mentor: Dan Ghica, Head of PL Lab
- Duties: Compiler backend testing and benchmarking. Compiler implementation and optimisation.

**Huawei London Research Centre**

28/10/2019 - 28/02/2020

*Hisilicon Kirin GPU Team, 2012 Laboratories*

*London, UK*

- Mentor: Graham Connor, Chief GPU Scientist
- Duties: Design of the layout of the benchmarking framework, implementation of the build system and cross-platform support, design and implementation of GPU micro-benchmarks.

16. Zhu Tao, Yongqiang Gao, Jiayi Qi, **Chao Peng**, Qinyun Wu, Xiang Chen, Ping Yang (2024). *Neat: Mobile App Layout Similarity Comparison based on Graph Convolutional Networks*. In proceedings of the ACM International Conference on the Foundations of Software Engineering (FSE 2024), Industry Track To appear
15. **Chao Peng**, Zhengwei Lv, Jiarong Fu, Jiayuan Liang, Zhao Zhang, Ajitha Rajan, Ping Yang(2024). *Hawk-eye: Change-targeted Testing for Android Apps based on Deep Reinforcement Learning*. In proceedings of the 46th IEEE/ACM International Conference on Software Engineering, Software Engineering in Practice Track (ICSE SEIP 2024) To appear
14. Xiaoyun Liang, Jiayi Qi, Yongqiang Gao, **Chao Peng**, Ping Yang (2023). *AG3: Automated Game GUI Text Glitch Detection based on Computer Vision*. In proceedings of the 2023 ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2023) To appear
13. Zongze Jiang, Ming Wen, Yixin Yang, **Chao Peng**, Ping Yang, Hai Jin, (2023). *Effective Concurrency Testing for Go via Directional Primitive-constrained Interleaving Exploration*. In proceedings of the 38th IEEE/ACM International Conference on Automated Software Engineering (ASE 2023) To appear
12. Siwei Wang, Xue Mao, Ziguang Gao, Yujun Gao, Qucheng Shen, **Chao Peng** (2023). *NxtUnit: Automated Unit Test Generation for Go*. In proceedings of the 27th International Conference on Evaluation and Assessment in Software Engineering (EASE 2023). To appear
11. Jingling Sun, Ting Su, Kai Liu, **Chao Peng**, Zhao Zhang, Geguang Pu, Tao Xie, and Zhendong Su (2022). *Characterizing and Finding SystemSetting-Related Defects in Android Apps*. IEEE Transactions on Software Engineering (TSE). April 2023
10. Zhengwei Lv, **Chao Peng**, Zhao Zhang, Ting Su, Kai Liu, Ping Yang. *Fastbot2: Reusable Automated Model-based GUI Testing for Android Enhanced by Reinforcement Learning*. In proceedings of the 37th IEEE/ACM International Conference on Automated Software Engineering (ASE 2022) Industry Showcase Track. October 2022
9. **Chao Peng**, Zhao Zhang, Zhengwei Lv and Ping Yang. *MUBot: Learning to Test Large-Scale Commercial Android Apps like a Human*. In proceedings of the 38th International Conference on Software Maintenance and Evolution (ICSME 2022) Industry Track October 2022
8. **Chao Peng**, Yujun Gao and Ping Yang. *Automated Server Testing: an Industrial Experience Report*. In proceedings of the 38th International Conference on Software Maintenance and Evolution (ICSME 2022) Industry Track October 2022
7. Sefa Akca, **Chao Peng**, Ajitha Rajan. *Testing Smart Contracts: Which Technique Performs Best?* In proceedings of the 15th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM 2021) October 2021
6. **Chao Peng**, Ajitha Rajan, Tianqin Cai. *CAT: Change-focused Android GUI Testing*. In proceedings of the 37th International Conference on Software Maintenance and Evolution (ICSME 2021) September 2021
5. **Chao Peng**, Ajitha Rajan. *Automated Test Generation for OpenCL Kernels using Fuzzing and Constraint Solving*. In proceedings of the 11th Workshop on General Purpose GPUs 2020 (GPGPU @ PPOPP) Feburary 2020
4. **Chao Peng**, Sefa Akca, Ajitha Rajan. *SIF: A Framework for Solidity Contract Instrumentation and Analysis*. In proceedings of the the 26th Asia-Pacific Software Engineering Conference (APSEC 2019). December 2019
3. Sefa Akca, Ajitha Rajan, **Chao Peng**. *SolAnalyser: A Framework for Analysing and Testing Smart Contracts*. In proceedings of the the 26th Asia-Pacific Software Engineering Conference (APSEC 2019). December 2019
2. **Chao Peng**. *On the Correctness of GPU Programs*. In proceedings of the 2019 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2019). July 2019
1. **Chao Peng**, Ajitha Rajan. *CLTestCheck: Measuring Test Effectiveness for GPU Kernels*. In proceedings of the 22nd International Conference on Fundamental Approaches to Software Engineering (FASE 2019). April 2019

## PROFESSIONAL SERVICE

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<b>PC Member (Research/Technical Track)</b>	FSE 2025, MSR 2023(Junior PC), A-Mobile 2022, PRDC 2022
<b>PC Member (Industry Track)</b>	ISSRE 2024, APSEC 2024, MSR 2024
<b>PC Member (Artifact Evaluation)</b>	OSDI 2022, USENIX ATC 2022, ISSTA 2022, 2021, 2020
<b>Student Volunteer</b>	PLDI 2020, ISSTA 2019, ETAPS 2019
<b>Reviewer</b>	ICSE 2019 SEIP (Software Engineering in Practice) Track

## SKILLS

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<b>Languages</b>	Mandarin Chinese - Native English - Proficient German - Basic
<b>Technical Skills</b>	Programming languages: C/C++, Java, Fortran, Python, Kotlin, Rust, Go Parallel programming: OpenMP, MPI, OpenCL, CUDA, SYCL Program Analysis: Java Soot, Clang LibTooling Computer Graphics: OpenGL (ES), Vulkan
<b>Tools</b>	L <sup>A</sup> T <sub>E</sub> X, Git, SVN, CMake, Gradle

## TEACHING EXPERIENCE

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<b>MSc Projects</b>	Apr 18 - Aug 18 and Apr 19 - Aug 19
<i>Sub-supervisor for MSc Projects</i>	<i>School of Informatics, University of Edinburgh</i>
Helping supervise the following MSc students for their projects:	
<ul style="list-style-type: none"><li>• Bowen Du: Code coverage measurement for GPU programs</li><li>• Yangning Li: Random test case generation for OpenCL programs</li></ul>	
<b>Software Testing</b>	Jan 18 - Apr 18, Jan 19 - Apr 19 and Jan 21 - Apr 21
<i>Teaching Assistant, Tutor and Marker</i>	<i>School of Informatics, University of Edinburgh</i>
<b>Computer Programming Skills and Concepts</b>	Nov 17 - Dec 17 and Dec 18 - Jan 19
<i>Marker</i>	<i>School of Informatics, University of Edinburgh</i>
<b>Introduction to Java Programming</b>	Sep 17 - Dec 17 and Sep 18 - Dec 18
<i>Demonstrator</i>	<i>School of Informatics, University of Edinburgh</i>
Nominated for Teaching Awards by students of this course	

## SCHOLARSHIPS & HONOURS

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### SCHOLARSHIPS

• School of Informatics Scholarship (fully-funded PhD scholarship)	Apr 17
• Outstanding Undergraduate Scholarship	Jun 16
• China National Scholarship of the 2014/15 Academic Year	Nov 15
• China National Encouragement Scholarship of the 2013/14 Academic Year	Nov 14
• China National Scholarship of the 2012/13 Academic Year	Nov 13

### AWARDS

• Nomination for Teaching Awards: Best Student Who Tutors Award	Feb 18
• Certificate of Achievement for Participating in the 6th Annual HPCAC Student Cluster Competition	Jun 17
• Distinct Graduate of Xuzhou University of Technology	Jun 16
• Top Ten Role Models of Learning at Xuzhou University of Technology	Mar 16
• Jiangsu Province-level Excellent Student Cadre	May 15