

GUANGBA YU

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EDUCATION EXPERIENCE

Sun Yat-sen University (SYSU), Guangzhou, China 2020 – Present

Ph.D. Candidate in Computer Science (CS), advised by Professor [Pengfei Chen](#), expected July 2024

Ph.D. Software Engineer Internship in [Tencent](#) from May 2022 to May 2023

Research Interest: Cloud Computing, AIOps, MLOps, Observability, Chaos Engineering

Sun Yat-sen University (SYSU), Guangzhou, China 2018 – 2020


M.E. in Computer Science (CS), advised by Professor [Pengfei Chen](#)

Research Interest: Cloud Computing, AIOps

Guangzhou University of Chinese Medicine (GZUCM), Guangzhou, China 2014 – 2018

B.E. in Medical Information Engineering

PROJECT AND PUBLICATION

 **Performance Diagnostics in Cloud System**, at **SYSU** and **Tencent** 2019 – Present

Leveraging traditional observability data, such as metrics, traces, and logs, along with new observability data from eBPF in cloud systems, to identify runtime anomalies and pinpoint the root causes.

1. **Guangba Yu**, Pengfei Chen, Yufeng Li, Hongyang Chen, Xiaoyun Li, Zibin Zheng. [Nezha: Interpretable Fine-Grained Root Causes Analysis for Microservices on Multi-Modal Observability Data](#). In *29th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), 2023*
2. **Guangba Yu**, Pengfei Chen, Hongyang Chen, Zijie Guan, Zicheng Huang, Linxiao Jing, Tianjun Wang, Ximmeng Sun, Xiaoyun Li. [MicroRank: End-to-End Latency Issue Localization with Extended Spectrum Analysis in Microservice Environments](#). In *the Web Conference (WWW), 2021*
3. **Guangba Yu**, Zicheng Huang, Pengfei Chen. [TraceRank: Abnormal Service Localization with Dis-Aggregated End-to-End Tracing Data in Cloud Native Systems](#). In *Journal of Software Evolution and Process (JSEP), 2021*
4. BenRan Wang, Hongyang Chen, Pengfei Chen, Zilong He, **Guangba Yu**. [MARS: Fault Localization in Programmable Networking Systems with Low-cost In-Band Network Telemetry](#). In *52nd International Conference on Parallel Processing (ICPP), 2023*
5. Yufeng Li, **Guangba Yu**, Pengfei Chen, Chuanfu Zhang. [MicroSketch: Lightweight and Adaptive Sketch based Performance Issue Detection and Localization in Microservice](#). In *20th International Conference on Service-Oriented Computing (ICSOC), 2022*
6. Xiaoyun Li, **Guangba Yu**, Pengfei Chen, Hongyang Chen. [Going through the Life Cycle of Faults in Clouds: Guidelines on Fault Handling](#). In *33rd IEEE International Symposium on Software Reliability Engineering (ISSRE), 2022*
7. Zilong He, Pengfei Chen, Yu Luo, Qiuyu Yan, Pengfei Chen, **Guangba Yu**, Fangyuan Li. [Graph based Incident Extraction and Diagnosis in Large-Scale Online Systems](#). In *37th IEEE/ACM International Conference on Automated Software Engineering (ASE), 2022*
8. Xiaoyun Li, Pengfei Chen, Linxiao Jing, Zilong He, **Guangba Yu**. [SwissLog: Robust Anomaly Detection and Localization for Interleaved Unstructured Logs](#). In *IEEE Transactions on Dependable and Secure Computing (TDSC), 2022*
9. Zijun Hu, Pengfei Chen, **Guangba Yu**, Zilong He, Xiaoyun Li. [TS-InvarNet: Anomaly Detection and Localization based on Tempo-spatial KPI Invariants in Distributed Services](#). In *2022 IEEE International Conference on Web Services (ICWS), 2022*
10. Zihao Ye, Pengfei Chen, **Guangba Yu**. [T-Rank: A Lightweight Spectrum based Fault Localization Approach for Microservice Systems](#). In *21st International Symposium on Cluster, Cloud and Internet Computing (CCGrid), 2021*
11. Zilong He, Pengfei Chen, Xiaoyun Li, Yongfeng Wang, **Guangba Yu**, Cailin Chen, Xinrui Li, Zibin Zheng. [A Spatiotemporal Deep Learning Approach for Unsupervised Anomaly Detection in Cloud Systems](#). In *IEEE Transactions on Neural Networks and Learning Systems (TNNLS), 2020*.
[ESI highly cited paper](#)

12. Xiaoyun Li, Pengfei Chen, Linxiao Jing, Zilong He, **Guangba Yu**. [SwissLog: Robust and Unified Deep Learning Based Log Anomaly Detection for Diverse Faults](#). In *31st International Symposium on Software Reliability Engineering (ISSRE)*, 2020

☞ Performance Optimization in Cloud System, at SYSU 2018 – Present

For cloud systems deployed on multi-cloud platforms, optimizing performance of cloud systems via identifying system bottlenecks and generating intelligent resource allocation and load balance policies.

1. **Guangba Yu**, Pengfei Chen, Zibin Zheng, Jingrun Zhang, Xiaoyun Li, Zilong He. [FaaS Deliver: Cost-efficient and QoS-aware Function Delivery in Computing Continuum](#). In *IEEE Transaction on Service Computing (TSC)*, 2023
2. **Guangba Yu**, Pengfei Chen, Zibin Zheng. [Microscaler: Cost-effective Scaling for Microservice Applications in the Cloud with an Online Learning Approach](#). In *IEEE Transactions on Cloud Computing (TCC)*, 2020
3. **Guangba Yu**, Pengfei Chen, Zibin Zheng. [Microscaler: Automatic Scaling for Microservices with an Online Learning Approach](#). In *2019 IEEE International Conference on Web Services (ICWS)*, 2019
4. Zhiming Chen, Pengfei Chen, PeiPei Wang **Guangba Yu**, Zilong He, Gengting Mai. [DiagConfig: Configuration Diagnosis of Performance Violations in Configurable Software Systems](#). In *31st Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, 2023
5. Jingrun Zhang **Guangba Yu**, Zilong He, Liang Ai, Pengfei Chen. [DeepPower: Deep Reinforcement Learning based Power Management for Latency Critical Applications in Multi-core Systems](#). In *52nd International Conference on Parallel Processing (ICPP)*, 2023
6. Wanqi Yang, Pengfei Chen, **Guangba Yu**. Network Shortcut in Data Plane of Service Mesh with eBPF. In *Journal of Network and Computer Applications, Minor Revision*, 2023
7. Jieqi Cui, Pengfei Chen, **Guangba Yu**. [A Learning-based Dynamic Load Balancing Approach for Microservice Systems in Multi-cloud Environment](#). In *26th International Conference on Parallel and Distributed Systems (ICPDS)*, 2020

☞ Observability Improvement of Cloud Systems, at SYSU and Tencent 2021 – Present

- Developed automatic instrumentation and intelligent sampling algorithms for tracing.
- Developed kernel-based non-intrusive and fine-grained metrics collection using eBPF.
- Identified log hotspots and implemented on-the-fly log reduction using eBPF.

1. **Guangba Yu**, Pengfei Chen, Pairui Li, Haibing Zheng, Yuetang Deng. [LogReducer: Identify and Reduce Log Hotspots in Kernel on the Fly](#). In *45th International Conference on Software Engineering (ICSE)*, 2023
[Run on WeChat Production and reduce logs amount of WeChat by 40%](#)
2. Zicheng Huang, Pengfei Chen, **Guangba Yu**. [Transparent Request Tracing and Sampling Method for Java-based Microservice System](#). In *Journal of Software*, 2023
3. Tianjun Weng, Wanqi Yang, **Guangba Yu**, Pengfei Chen, Jieqi Cui, Chuangfu Zhang. [Kmon: An In-kernel Transparent Monitoring System for Microservice Systems with eBPF](#). In *2021 International Workshop on Cloud Intelligence*, 2021
4. Zicheng Huang, Pengfei Chen, **Guangba Yu**. [Sieve: Attention-based Sampling of End-to-End Trace Data in Distributed Microservice Systems](#). In *2021 IEEE International Conference on Web Services (ICWS)*, 2021
5. Hongyang Chen, Pengfei Chen, **Guangba Yu**, Xiaoyun Li, Zilong He. [MicroFI: Non-Intrusive and Prioritized Request-Level Fault Injection for Microservice Applications](#). In *IEEE Transactions on Dependable and Secure Computing (TDSC), Major Revision*, 2023

🔥 AWARDS

- | | |
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| • National Scholarship | 2023 |
| • Tencent Rhino-Bird Research Elite Program | 2022 |
| • Tencent Special Scholarship | 2022 |
| • China Telecom Scholarship | 2016 |

🗣️ TALK EXPERIENCE

📍 Performance Diagnose and Optimization in Distributed Systems

- Chinese University of Hong Kong, Shenzhen, China, July 2023
- Anhui University, Hefei, China, Aug. 2023
- Guangzhou University of Chinese Medicine, Guangzhou, China, Oct. 2023

📍 **LogReducer: Identify and Reduce Log Hotspots in Kernel on the Fly**

- ICSE 2023, Melbourne, Australia, May 2023

📍 **Practice and Exploration on WeChat Log Reduction**

- 1st Observability Summit of Cloud Native Community, Beijing, China, April 2023

📍 **TraceRank: Abnormal Service Localization with Dis-aggregated End-to-End Tracing Data**

- Chinasoft 2021, Xi'an, China, Dec. 2021

📍 **MicroRank: End-to-End Latency Issue Localization with Extended Spectrum in Microservice Systems**

- WWW 2021, Slovenia, April 2021

📍 **Microscaler: Automatic Scaling for Microservices with an Online Learning Approach**

- ICWS 2019, Milan, Italy, July 2019

👤 **TEACHING EXPERIENCE**

- **Operating System** Teaching Assistant SYSU Fall 2021
- **Software Engineering** Teaching Assistant SYSU Fall 2020
- **Distributed System** Teaching Assistant SYSU Fall 2018

⚙️ **PROFESSIONAL SERVICE**

- **Program Committee Member** USENIX ATC 2022 Artifact, OSDI 2022 Artifact, WWW 2024
- **External Reviewer** ICSOC 2022, ICSOC 2021