Bingyu Shen

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Education

2017–2022(Expected) **University of California, San Diego**, La Jolla, CA.
Ph.D. in Computer Science, advised by Professor Yuanyuan Zhou, GPA: 3.8/4.0

2013–2017 **Shanghai Jiao Tong University**, Shanghai, China.
B.S., in Computer Science & Technology, Graduated with Honor, GPA: 3.8/4.0

Skills

Langages, Proficient with C++, python, experience with Java, OCaml, Matlab, SQL.

Tools, LLVM, Android Studio, Docker, Spark, MongoDB, MySQL, PostgreSQL, Git, Latex.

Research Experience

Oct 2019 – Present **Improving Access-denied Issues Diagnosis with Enhanced Logs**, *UCSD*, advised by Prof. Yuanyuan Zhou.
- Analyzed the access control related log messages of six server applications and characterized the logging practices for access control.
- Developed a tool to automatically extract relevant information at the access-denied location with static analysis based on LLVM, and insert into the log messages.
- Performed user study to show the effectiveness of improved diagnostic information.
- More than 30 enhanced log messages have been confirmed or adopted by the server applications.

May 2018 – June 2020 **Smartphone Runtime Permission Comprehension**, *UCSD*, advised by Prof. Yuanyuan Zhou.
- Analyzed the prevalence of Android applications with low target SDK versions based on real user permission settings and disclosed the misunderstanding of permission models among users.
- Investigated how current system-provided information can help users understand the scope of permissions and their potential risks with large scale user study.
- Explored how different information including background access, brand reputation to help users make more informed permission decisions.

Oct 2017 – May 2018 **Access Control Validation and Forensics**, *UCSD*, advised by Prof. Yuanyuan Zhou.
- Proposed a decision tree learning-based technique to infer access-control policies from access logs.
- Proposed a new time-changing decision tree model to represent and infer policy changes from logs.
- Evaluated with access logs from five real-world systems and showed that our approach improved the inference accuracy (F-score) by 17.3%, comparing with the traditional decision tree.

Dec 2016 – Mar 2017 **Adaptive Online Network Risk Management**, *SJTU*, advised by Prof. Xiaoying Gan.
- Designed an online adaptive risk management framework so as to accommodate the exponential rise in number of cyber attacks and a high variability in attack intensity
- Applied Principle Component Analysis (PCA) and subspace method on network traffic data to detect anomalies and compared to the true labels of anomalies. Use the detected anomalies for experiments and demonstrated faster convergence rates

Sep 2015 –Dec 2016 **Congestion-Aware Network Selection and User Incentive Design**, *SJTU*, advised by Prof. Xiaoying Gan.
- Proposed a contract-based dynamic offloading scheme with which to maximize operators profit, achieve load balance and provide user participation incentive
- Demonstrated effectiveness in maximizing operators profit and inciting operator for high quality service with numerical results

Work Experience

Jun 2019 –
Sep 2019
Amazon Web Services, *Aurora Database group*, Software Engineering Intern.
- Performed measurement of failure detection and recovery time for masters and replicas under different failure modes, updated internal manuals and design docs.
- Designed and implemented cron jobs to fetch monitoring metrics such as heartbeat, transaction log ID and replication log ID for the health monitoring of secondary replicas.
- Integrated with cluster manager to monitor health status of master and replica, which improved the failure detection time less than 1 second on all failure modes.

Jun 2016 –
Sep 2016
York University, Research Intern, mentored by Prof. Marin Litoiu.
- Processed traffic data in the Great Toronto Area and extract features like date, traffic volume.
- Proposed LSTM based traffic flow prediction and compared with DNN and SVM techniques.

Teaching Experience

Fall 2019 **Graduate Operating Systems**, Teaching assistant

Fall 2018 **Principles of Computer Operating Systems**, Teaching assistant

Publications

[Security'21] **Bingyu Shen**, Lili Wei, Chengcheng Xiang, Yudong Wu, Mingyao Shen, Yuanyuan Zhou, Xinxin Jin. *Can Systems Explain Permissions Better? Understanding Users' Misperceptions under Smartphone Runtime Permission Model*, To appear in the 30th USENIX Security Symposium.

[CCS'19] Chengcheng Xiang, Yudong Wu, **Bingyu Shen**, Mingyao Shen, Tianyin Xu, Yuanyuan Zhou, Cindy Moore, Xinxin Jin, Tianwei Sheng. *Towards Continuous Access Control Validation and Forensics*, In Proceedings of the 2019 ACM SIGSAC Conference on Computer and Communications Security.

[TWC'17] Yuqing Li, **Bingyu Shen**, Jinbei Zhang, Xiaoying Gan, Jingchao Wang, Xinbing Wang. *Offloading in HCNs: Congestion-Aware Network Selection and User Incentive Design*, In IEEE Transactions on Wireless Communications (**TWC**) (Volume: 16, Issue: 10, Oct. 2017)

Awards & Honors

2017 **Department Fellowship**, *UCSD.*

2016 **Mitacs Globalink Scholarship**, *SJTU.*

2014 – 2016 **Academic Excellence Scholarship**, *SJTU.*

2014 – 2016 **ABB Dormann Scholarship**, *SJTU.*

2015 **Samsung Scholarship**, *SJTU.*

2014 **Tung OOCL Scholarship**, *SJTU.*

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