

Yibin Liao

Email	tigerlyb@gmail.com
Phone	601-497-5119

Summary

- I obtained my **PhD** degree in **Computer Science** major at the **University of Georgia** in **Dec. 2018**. My research focused on the **computer system** and **software security**, especially for automating the analysis of system and software security incidents. I often combine systems research with **machine learning** techniques to solve various software security and reverse engineering problems.
- Familiar with **Java** and **Python**; Familiar with **Android** system development on kernel; Familiar with **reverse engineering** and software debugging (IDAPro, gdb, adb, etc.), especially on mobile platforms (Both Android and iOS). Experienced in security **CTF** competitions (iCTF, CSAW). Experienced in software and web development with **Python** (**Django**) and **JavaScript**.

Education

[University of Georgia \(UGA\)](#), Athens, GA, USA
PhD in [Computer Science](#), Aug. 2012 – Dec. 2018

[University of Louisiana at Lafayette \(ULL\)](#), Lafayette, LA, USA
Master of Science in [Computer Engineering](#), Jan. 2010 – Dec. 2011

[Nanchang Hangkong University](#), Nanchang, Jiangxi, China
Bachelor of Engineering, [Electrical & Information Engineering](#), Sep. 2004 – Jul. 2008

Work Experience

Research Scientist Intern, May 2016 – August 2016

Qihoo 360 Technology Co. Ltd.

- (**Python and C/C++**) Implemented an automatic on-device analysis framework for packed Android applications.
- Involved in designing system techniques for reverse engineering mobile apps.

Software Developer & IT Assistant, Aug. 2013 – Dec. 2017

Department of Pathology, College of Veterinary Medicine, UGA

- (**Java + MySQL**) Developed and maintained a web-based information system called Noah's Arkive (dlab.vet.uga.edu/NA/) for the College of Veterinary Medicine.
- (**Java + MySQL**) Worked with the VetView's (<http://www.vetview.org/>) project team for developing enterprise web-based Veterinary Hospital Software and Laboratory Management Software products. My role was focused on

developing the LabPortal project for the UGA Veterinary Diagnostic Laboratories (<https://adlab.vet.uga.edu/LabPortal/>).

System Administrator & Programmer, Jan. 2013 – May 2013

School of Social work, UGA

- (**Java + MySQL**) Developed and maintained a list of web-based applications such as scholarship and assistantship management system, course evaluation system, inventory management system etc.

Software Developer & IT Assistant, Feb. 2010 – Dec. 2011

Civil Engineering Department, University of Louisiana at Lafayette

- (**JavaScript**) Developed a Web-Based, highly visual educational system (**HydroViz**: <http://www.hydroviz.org/>) that support active learning in the field of Hydrology.

Research Projects

1. **Function Similarity Identification for Reversing Mobile Binaries (2017 - 2018):**
(**Python and JavaScript**) Designed a Trace-based Function Similarity Mapping System (**MobileFind**: https://link.springer.com/chapter/10.1007/978-3-319-99073-6_4) that detects function similarity at binary level across different optimization options and obfuscation levels on mobile platforms.
 - Extract function execution behaviors via **dynamic instrumentation** and **symbolic execution**, then characterize functions with collected behaviors and perform function matching via **machine learning** models.
2. **Android Packer Analysis (2015 - 2017):**
(**C/C++, Java and Python**) Designed an automatic analysis system (https://github.com/tigerlyb/android_packing_analysis) that provides a comprehensive view of packed Android applications' behavior. The main analysis part is based on **Android source code instrumentation**.
 - **Bytecode level analysis**: instruments both Android Runtime (**ART**) and Dalvik Virtual Machine (**DVM**) to extract the hidden class information during the app's execution, and then reassemble the original DEX files that was hiding by the packer.
 - **Native code level analysis**: monitors the execution behavior of native components in packed Android apps, including system call trace, native-to-Java (JNI) communication trace, library call trace, and Binder (IPC transaction) trace.
3. **Virtual Appliance Detection (2014):**
This project is about how to detect virtual appliance environments with scripts and binaries. We covered different detection techniques from using **WebGL**, **JavaScript**, and **ActiveX** to device fingerprints that detect different virtualization models, from popular virtual machines to light weight bare-metal hypervisors.

4. **Pre-computed Clustering for Movie Recommendation System in Real Time** (<http://www.hindawi.com/journals/jam/2014/742341/>) (2013)
 - Presented a novel idea that applies **machine learning** techniques to construct a cluster for movies by implementing a distance matrix based on the movie features and then make movie recommendation in real time.
5. **PE-Header-Based Antivirus Tool (2012)**
 - (**Python**) Developed a PE-Header-based antivirus tool for windows malware detection (<https://github.com/tigerlyb/PE-Header-Parser-in-Python>).

Publications

- Yibin Liao, Ruoyan Cai, Guodong Zhu, Yue Yin and Kang Li. "**MobileFindr: Function Similarity Identification for Reversing Mobile Apps**". European Symposium on Research in Computer Security, ESORICS 2018. [[PDF](#)]
- Yibin Liao, Jiakuan Li, Bo Li, Guodong Zhu, Yue Yin, and Ruoyan Cai. "**Automated Detection and Classification for Packed Android Applications**". IEEE International Conference on Mobile Services (MS), 2016. [[PDF](#)]
- Guodong Zhu, Kang Li, and Yibin Liao. "**Toward Automatically Deducing Key Device States for the Live Migration of Virtual Machines**". IEEE International Conference on Cloud Computing, 2015. [[PDF](#)]
- Bo Li, Yibin Liao, and Zheng Qin. "**Precomputed Clustering for Movie Recommendation System in Real Time**". Journal of Applied Mathematics, 2014. [[PDF](#)]

Other Experience (Python & Django Full Stack Web Developer)

NOMNOMS Food Delivery (<https://nomnomsdelivery.com/>)

- (**Python**) Developed a food delivery system served in Clinton, Mississippi.

Wealth Management (<https://wmwinnerslist.com/>)

- (**Python**) Developed a mutual fund selection system that helps customers to identify the best funds.