DAVID SOLODUKHIN

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EDUCATION

Georgia Institute of Technology - Atlanta, GA **Graduating Dec 2019**
Candidate for B.S. in Computer Science
GPA: 3.96/4.0
Courses: Information Security Lab, Distributed Systems, Advanced O.S. Development, Database Systems Design, Networking
Orgs: Grey Hat Security CTF team: web exploit engineer, Collegiate Cyber Defense Competition Team, Linux Users Group; Phi Kappa Theta (ΓΤ) Fraternity– I.T. Chair

EXPERIENCE

VMware – Palo Alto, CA **May 2019 – Present**
Software Engineer Intern– VM Platform

- Designing system portable features to integrate container orchestration running in the guest O.S. with ESXi and workstation hypervisor layers as well as vSphere clients. (C, C++, Python)

Prudential Financial – Newark, NJ **May 2018 – August 2018**
Software Engineer Intern, Enterprise Services & Systems

- Added several features to an internal metadata management system, enabling lower query latency, a wider array of query protocols as well as reorganization into microservices.
  - Added frontend features using ReactJS (previously JSP) and rewrote Struts2 MVC functionality in Spring MVC(Web).
- Reduced daily build time of MMS system by several hours with multi-module Maven build scripts that automate building of Oracle ADF applications.

Georgia Tech Database Research Group - Georgia Tech **Feb 2019 – Present**
Undergraduate Researcher– Dr. Joy Arulraj – **Accelerating Data Analytics using Logical Zone Maps**

- Aided in designing new logical indexing structures used for caching statistical aggregates for subsets of data. Implemented mock dbms components such as a mixture model engine which would evaluate new indexing techniques as well as support approximate query processing. (C++)

College of Computing - Georgia Tech **January 2019 – Present**
Undergraduate Teaching Assistant – Design and Analysis of Operating Systems

- Responsibilities consist of grading, hosting office hours to help students understand key operating systems concepts and learn kernel programming.

Institute for Information Security and Privacy - Georgia Tech **October 2017 – October 2018**
Undergraduate Researcher – Dr. Taesoo Kim – Fuzzification: Anti-Fuzzing Techniques

- Designed and evaluated new anti-fuzzing techniques to slow down modern fuzzers and protect software from malicious fuzzing.
- Wrote LLVM passes in **C++** to implement anti-fuzzing techniques in existing Linux executables.
- Automated source-code instrumentation, unit testing of anti-fuzzing methods as well as analysis and plotting of fuzzing statistics with **Python**.
- Revised and edited final paper which was accepted in USENIX(2019) and Black Hat (pending).

PROJECTS, CVES, PAPERS– GITHUB.DAVIDTHATS.ME

- Jinho Jung, Hong Hu, **David Solodukhin**, Daniel Pagan, Kyu Hyung Lee, and Taesoo Kim. **Fuzzification: Anti-Fuzzing Techniques** (to appear). *In Proceedings of the 28th USENIX Security Symposium (Security 2019)*, Santa Clara, CA, August 2019.
- **Linux Kernel Modules** (kernel v4.15.18): Developed a module which starts a UDP server process within the kernel for transmitting O.S. filesystem, process stats. Implemented a kernel module for network traffic artificial throttling and packet proxy. Modules were written in C.
- **Linux Kernel Hypervisor(KVM) Scheduler**: KVM management app that load balances up to 24 virtual machines on a multi core processor based on virtual CPU & memory load, leading to **~%5** more throughput compared to native KVM (C,C++)
- **(K)ASLR and PIE for xv6**: Implemented user-space ASLR and simple kernel ASLR for the xv6 operating system. Also added custom PIE support for xv6 binaries.
- **Map-Reduce GRPC Implementation:** Map-Reduce architecture using GRPC for distributed rpc communication. Architecture includes separate worker and master applications written in C++ with load balancing, fault tolerance and efficient sharding.
- **Wolfram Alpha Bug:** Found SSRF vulnerability in Wolfram Alpha's api giving access to premium features for free.
- Contacted WA team and exploit was patched.

SKILLS

Languages: C++, C, Java, Javascript, Python, (PL)SQL, Perl, PHP, x86/64 ISA (GAS, FASM)
Systems, Technologies/Tools: LLVM, OpenMP, MPI, Docker, Kubernetes, KVM/QEMU, libvirt, C/Make, Scons, Maven, Gradle, Android SDK/NDK, Google Test, Jenkins/Travis CI, Reverse Engineering, Linux Kernel, fuzzing, AWS:LightSail/EC2, IDA/Ghidra, Struts2, Nodejs, Flutter, JSP, Virtualization(tba).
Foreign Language: Russian; Native Fluency