Shukai **Ni**

138-1228-3130 | shukai_ni@brown.edu | 9r0x | shukai-ni

Education

Brown University — *GPA 4.0/4.0 - Providence, RI*

Data Science/Computer Science, M.Sc. — *Sep. 2022 - May. 2024*

- Advisor: Vasileios P. Kemerlis
- Operating Systems, Software Security and Exploitation, Parallel Computing on CPU/GPU, Deep Learning…

Minerva University — *GPA 3.8/4.0(Top 5%) - Worldwide*

Computational Sciences & Business, B.Sc. — *Sep. 2018 - May. 2022*

- (Triple Majors) Software Development, Data Science and Statistics, Strategic Finance
- Software Development, Operating System, Data Structure, Machine Learning, Bayesian Statistics, Accounting…

Skills

Full Stack Programming	Python, C, PHP, SQL, R, HTML/CSS/JavaScript, Git, AWS, GCP
Machine Learning and AI	TensorFlow, Image Segementation, LLM, CNN, RNN
Low-level System Security	Linux Kernel, GDB, LLVM, Shadow Stack, ASLR, DEP, ROP
Languages	English (Fluent), Mandarin (Native)

Tech experiences

(Research) Secuirty-in-design high performance macro kernel — *Beijing, CN*

ZGC Lab - State Key Laboratories — *2024 - PRESENT*

- Redesigned Linux compartmnetalization, realizing user space protection and hardware isolation
- Implemented SFI-based eBPF isolation for data structure protection with JIT instrumentation
- Porting Linux-based hardening techniques to OpenKylin and OpenEuler OS

(Research) SysXCHG: a dynamic Linux kernel filter for system calls — *Providence, US*

Brown Secure Systems Lab — *Jan. 2023 - PRESENT*

- Developed an advanced log-time syscall filtering application using seccomp BPF, resulting in improved system efficiency
- Customized Linux kernel 6.0.8 compilation, integrating arity-based filters for enhanced performance
- Designed comprehensive test suites, leading to the attainment of the 2023 CCS Functional Badge

(Research) Interp-flow Hijacking: Non-control Data Attack via Hijacking eBPF Interpretation Flow — *Providence, US*

Zhejiang University(advisor: Wenbo Shen) — *Sep. 2023 - PRESENT*

- 2024 Distingished Paper Award at ESORICS
- A novel method to hijack eBPF interpretation flow, increasing kernel attack capability
- Conducted comprehensive background research in the areas of eBPF and kernel security

(Research) Microservice benchmarking — *Providence, US*

Brown University — *Sep. 2023*

- Analyzing and evaluating microservice frameworks employed by Meta and Alibaba
- Designing a realistic data pipeline for microservice benchmarking

(Internship) Data automation and Security — *Charlotte, US*

Bank of America — *May. 2023 - Aug. 2023*

- Implemented testing coverage through streamlining protocols, leading to 25% time savings
- Visualized coverage statistics through Python and Alteryx, delivering analysis to senior directors
- Developed high-concurrency data workflows for SQL and NoSQL databases

(Internship)Full stack trading data solution — *Remote, US*

Elle Investments — *May. 2022 - Dec. 2022*

- Overhauled a low-level persistent storage saving 20% write time, 40% read time, and 45% RAM, increasing overall performance
- Addressed SQL injection vulnerabilities and restructured MVC+OOP stateless deployment framework to strengthen security measures
- Implemented a dynamic HTTP cache that increased concurrency by 1000x, significantly enhancing the overall user experience

(Research) Quantum machine learning lab — *Remote*

The IBM Qiskit Quantum Computing — *July 2021 - Aug. 2021*

- Investigated practical applications of Quantum Approximate Optimization Algorithm, optimizing solutions for complex problems
- Conducted in-depth analysis of Quantum Boltzmann Machines, driving advancements in data generation and quantum computing