Shukai **Ni**

650-730-4795 | 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) Data Science and Statistics, Software Development, Strategic Finance
- Data structure, Linear optimization, Machine learning, Software Development, Bayesian statistics, Accounting……

Skills

Programming Python, C, PHP, SQL, R, MatLab
Web HTML/CSS/JavaScript, React.js, jQuery, Flask, Django
Tech Stacks Kernel, TensorFlow, Docker, Kubernetes, Redis, Kafka
Tools GDB, Git, LLVM, LaTeX, Jupyter, Terraform, AWS, GCP, Ansible
Languages English (Fluent), Mandarin (Native)

Tech experiences

Brown Secure Systems Lab
Providence, US

(Research) SysXCHG: a flexible Linux kernel filter for system calls *Jan. 2023 - Aug. 2023*

- 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 versatile syscall handlers for policy-driven binaries, enabling flexibility and streamlined execution

Zhejiang University(advisor: Wenbo Shen)
Providence, US

(Research) Interp-flow Hijacking: Non-control Data Attack via Hijacking eBPF Interpretation Flow *Sep. 2023 - Present*

- A novel method to hijack eBPF interpretation flow, increasing kernel attack capability
- Edited, reviewed, and proofread the paper before submission, ensuring quality and accuracy
- Conducted comprehensive background research in the areas of eBPF and kernel security

Brown University
Providence, US

(Research) Microservice benchmarking *Sep. 2023 - PRESENT*

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

Brown Secure Systems Lab
Providence, US

(Research) BPF security and application *Jan. 2023 - PRESENT*

- Studied and implemented BPF-based system call filtering
- Developing a fine-grained system call policy, enhancing kernel security and scalability

Bank of America
Charlotte, US

(Intern) Corporate Audit: data automation and technology *May. 2023 - Aug. 2023*

- Implemented audit 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

Elle Investments
Remote, US

(Intern)Full stack web application development *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

The IBM Qiskit Quantum Computing
Remote

(Research) Quantum machine learning lab experiences *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

Correlation between Fama-French factors and business cycles *Remote*

(Research) Timing strategy based on spread curve inversion, second author *June 2021 - PRESENT*

- Advised by Dr. Arnav Sheth from MIT
- Developed a probit-based recession forecasting model, achieving 70% accuracy, which contributed to a 10% annualized return
- Analyzed business cycles through Fama-French factors using ex-ante and ex-post evaluation methods, confirming the model's validity