Shukai **Ni**

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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

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

(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*

- 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

(Research) Microservice benchmarking
Providence, US

Brown University *Sep. 2023 - PRESENT*

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

(Internship) Corporate Audit: data automation and technology
Charlotte, US

Bank of America *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

(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

(Research) Timing strategy based on spread curve inversion, second author
Remote

Correlation between Fama-French factors and business cycles *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