

# Shukai Ni

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## Education

### Brown University

DATA SCIENCE/COMPUTER SCIENCE, M.Sc.

GPA 4.0/4.0 - Providence, RI

Sep. 2022 - May. 2024

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

### Minerva University

COMPUTATIONAL SCIENCES & BUSINESS, B.Sc.

GPA 3.8/4.0(Top 5%) - Worldwide

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

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