

Bao Phan

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EDUCATION

Purdue University

Bachelor of Science in Computer Science (Major GPA: 3.58)

West Lafayette, IN

Expected May 2025

WORK EXPERIENCE

Software Engineer Intern FPT Software

May 2024 - Aug 2024

- Led a team of **9** interns to build a microservices-based LMS using Java, Spring Boot, Docker, and GCP
- Utilized Kafka to improve task processing and service scalability increasing throughput by **50%**
- Implemented PostgreSQL to Elasticsearch sync with Debezium and Kafka, enabling full-context search
- Optimized **40%** performance by using Redis for caching

SURF Undergraduate Research Fellow JRL Lab - Purdue University

May 2023 - Aug 2023

- Developed a configurable level III self-driving simulation using UE 5.1 and C++ for NSF-granted research
- Developed a vehicle queuing algorithm with **95%** accuracy, optimizing stop sign flow based on U.S. traffic rules
- Built a UDP pipeline for event transmission, reducing FPS drop by **40%** and improving performance

Full Stack Developer Intern OplaCRM

Jan 2023 - Apr 2023

- Built a full-stack e-commerce platform for over **200+** corporations and **400+** partners using Gin and PostgreSQL
- Implemented GraphQL API, enabling smoother frontend integration by allowing flexible data retrieval
- Developed and customized multiple React components based on new layout designs created in Figma
- Optimized deployment with Docker and improved caching using Redis, reducing load times by **30%**

PERSONAL PROJECTS

Cloud Alloc | Java, Spring Boot, PostgreSQL, Docker, Kafka, ElasticSearch, MinIO/Cloudflare R2

- Developed a Spring Boot API to manage multiple Google Drive and Dropbox accounts
- Used PostgreSQL as a DB, and Redis as a cache for the cache-aside pattern
- Implementing CDC using Debezium and Kafka to sync data near real-time from PostgreSQL and Drive to ElasticSearch, enabling full-context search over both file metadata and file contents
- Implemented lazy updating using MinIO as a cache for file updates, decreasing API calls to Drive and Dropbox

Petinder | Java, Spring Boot, PostgreSQL, Docker, RabbitMQ, GCP Compute Engine, GCP Cloud Storage

- Developed a microservices backend API that is similar to Tinder but for pets, and deployed on GCP
- Used RabbitMQ as a message broker for services communication, decoupling the backend services
- Implemented OAuth2 login with Google/GitHub using Spring Security
- Implemented full context search for pets using PostgreSQL's Full-Text Search

Personal Finance App | Java, PostgreSQL, JavaScript, ReactJS, AWS Lambda, AWS RDS, AWS API Gateway

- Created a responsive dashboard UI to display transactions and statistics using ReactJS and Material UI
- Developed a highly scalable serverless backend using Java, AWS Lambda, and AWS RDS for PostgreSQL
- Utilized AWS API Gateway for load balancing and exposing the API

XinuOS | C, x86 Assembly

- Enhanced XINU's scheduler by implementing a dynamic scheduling algorithm using multilevel feedback queues reducing complexity from **O(n)** to **O(1)**
- Tracked per-process CPU usage and response times, boosting system responsiveness for **100+** processes by **20%**
- Developed a framework to adjust process priorities dynamically, increasing throughput by up to **40%** for CPU-bound and I/O-bound processes

The Shell Project | C++, lex, yacc

- Developed a Unix-like shell interpreter in C++ with command parsing, execution, and I/O handling
- Integrated environment variable expansion, quote handling, escaping, and built-in commands
- Implemented control flow constructs: if statements, while loops, and for loops - enabling scripting capabilities

TECHNICAL SKILLS

Languages: Java, Golang, C/C++, JavaScript/TypeScript, SQL, Bash, C#, HTML/CSS, Python, x86 Assembly

Technologies: Docker, AWS, GCP, Azure, Kafka, Redis, Elasticsearch, Debezium, Git, MinIO, Swagger

Frameworks: Spring/Spring Boot, Gin, ReactJS, Ant Design, Material UI