Furkan Karabulut

Raleigh, NC: Open to Relocation	frkrbltn2332@gmail.com	GitHub	LinkedIn	Portfolio

EDUCATION

B.Sc. in Computer Science 08/2021 – 05/2024
North Carolina State University Raleigh, NC
GPA: 3 / 4

SKILLS

Languages: Java, C, Python, SQL, JavaScript, TypeScript, CSS, HTML, C#
Tools: VS Code, Eclipse, Jupyter Notebook, JetBrains (IntelliJ, CLion, WebStorm)
Operating Systems: Microsoft, macOS, Linux
Cloud Services: AWS (S3, EC2, Cloud9, RDS, DynamoDB, IAM, VPN, Lambda)

WORK EXPERIENCE

Software Engineer (Intern), Live Oak Bank: 06/2023 – 08/2023
Projects: Full-stack developer Raleigh, NC

- Developed and maintained RESTful APIs, focusing on user authentication and testing using Postman and AWS API Gateways enhancing system functionality and reliability
- Executed advanced front-end tasks by utilizing CSS and Bootstrap for layout designs provided from Figma and leveraged React.js to create dynamic and responsive components.
- Engineered Docker containers to establish a private network for microservices, optimizing development and deployment workflows. Explored Terraform and AWS conducted comprehensive research to gain a deeper understanding of cloud architecture and service integrations.
- Provided regular oral and written reports to advisors, consistently completing tasks ahead of schedule, showcasing efficiency and proactive communication within agile framework

Software Engineer (Part-Time), PQSecure Technologies: 01/2023 – 06/2023
Projects: Memory Optimization for data structure Remote

- Conducted in-depth analysis and optimization of XMSS and LMS algorithms to enhance efficiency and security.
- Improved memory and computational efficiency by refining L-Tree and Merke tree traversal algorithm.
- Innovated the authentication node update process for XMSS, leading to a 6% reduction in memory usage
- Sole author of two patent applications:
    - A patent for a novel method that optimized memory utilization in cryptographic signature generation, improving overall system performance.
    - A patent for a unique implementation technique of cryptographic algorithms, which established PQSecure Technologies' proprietary methodology distinct from standard reference implementations.

Undergraduate Researcher, North Carolina State University: 06/2022 – 11/2022
Project: Algorithm Profiling & Efficiency Optimization Raleigh, NC

- Conducted a detailed analysis of codebase to identify and eliminate bottlenecks, enhancing algorithmic efficiency
- Implemented optimized algorithms by refactoring code, which involved unraveling nested loops and adopting more efficient data structures, achieving 96% improvement in runtime efficiency.

PROJECTS

Load Wolf Application for Ad-Hoc and Scheduled Jobs:

- Created and managed AWS VMs, monitored resource allocation, and utilized IAM for security
- Followed Agile framework using Git and Jira for task management, milestone tracking, and managing code branches for smooth team collaboration.
- Designed high-level architecture involving front end, web server, MySQL database, scheduler program; created low-level design for ERDs, API design, and OOP principles
- Implemented components with TypeScript and React Bootstrap for frontend, React routers for backend, and SQL in Python for database connectivity; utilized React Bootstrap to dynamically display backend data and used Docker containers for component isolation to connect them with compose.yaml file.
- Developed unit, integration, smoke, and regression tests.

Coffee Maker Application:

- Engineered RESTful APIs using Java with Hibernate for seamless order and payment processing.
- Design backend sequence diagrams to architect a scalable and resilient application
- Refined UI flow with AngularJS, HTML, CSS and JavaScript, enhancing the customer ordering experience.
- Structuring a robust MySQL database design, optimized for high-performance data handling and integrity.

PUBLICATIONS AND PATENTS

- Method for computing unbalanced L-Trees efficiently for hash-based signatured used in post-quantum
- A memory efficient method for the implementation of node authentication in hash-based signatures data structure