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
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 structures 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 existing 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.

PERSONAL PROJECTS

Data Structure:

- Implemented various data structures (arrays, linked lists, stacks, queues, graphs, and trees)
- Analyzed and implemented sorting algorithms such as heap, merge, insertion, selection, quick, counting, radix

Coffee Maker Application:

- Engineered RESTful APIs using Java with Hibernate for seamless order and payment processing.
- Translated complex client requirements into actionable user stories, ensuring essential functionalities and system robustness.
- Design backend sequence diagrams to architect a scalable and resilient application
- Refined frontend user interface 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 left node authentication in hash-based signatures data structure