

# Kunli Liu

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## EDUCATION

### **University of Pennsylvania**

Philadelphia, PA

*Master in Computer and Information Technology* GPA: 3.96/4.0

09/2019 - 05/2022

Computer Architecture; Operating System; Data Structures and Software Design; Algorithm Design and Analysis; Computer Vision and Computational Photography; Database and Information System; Big Data and Machine Learning

### **Michigan State University**

East Lansing, MI

*Ph.D. Candidate in Chemistry* GPA: 3.70/4.0

08/2017 - 08/2022

## TECHNICAL STRENGTHS

Java, Python, C, Linux/Unix, MicroService, Java Spring Frameworks, SpringBoot, Maven, Hibernate, SQL, noSQL, AWS, MongoDB, Neo4j, Spark, REST APIs, JavaScript, Node.js, React.js, HTML, CSS

## WORK EXPERIENCE

### **Oracle Corporation**

Seattle, WA

*Software Engineer Intern*

05/2021 - 08/2021

- Collaborated in an agile team to improve on the back-end design of the Oracle Hardware Testing platform to enable test automation of the Oracle Servers
- Utilized the Java SpringBoot and Hibernate frameworks, employed the MicroServices Architecture, and restructured the REST APIs to accomplish in-order and atomic execution of the test groups
- Switched from the polling mechanism to the message-driven mechanism for in-order execution
- Significantly reduced network latency between the front-end and the back-end systems by restructuring payload to backend system, and by refactoring message format within backend system
- Delivered the software product with an above the expectation rating, created the software documentation, and presented the product to the user team

## PROJECTS

### **Music Recommendation Web Application: Node.js | React.js | AWS | JavaScript** 05/2021

- Developed a web application to help users generate a recommended music listing based on various criteria, including the years, the genres, and the geographic information displayed with the Google map APIs
- Developed the user interface with React library, which allowed the users to get the recommended listing and save the listing into the database
- Created the music information database and user information database which were stored in the AWS RDS portal
- Increased the SQL query response time by 8% through caching and efficient indexing design of the database

### **TCP Network Server and Client Handshake: C Language**

10/2020

- Built TCP client and server three-way handshake using both the Multi-threaded approach and the Asynchronous approach
- Employed multi-threaded programming for the server to support multiple concurrent client requests
- Implemented the event-driven asynchronous programming for a single-threaded server to support multiple client requests

## Graduate work

- Invented surface-enhanced Raman scattering nanoparticles with **2500x** stronger signal compared to the existing commercial nanoparticles
- Discovered **6.5x** more effective hyaluronic acid derivatives using high-throughput combinatorial chemistry
- Established novel methodology for targeted gene therapy of hypertension treatment based on nanoparticles