

# Yudai Chen

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## EDUCATION

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**Rice University**, Houston, TX

*Expected Dec. 2020*

- Master of Computer Science, **GPA: 3.91/4.00**, **Courses:** Operating System, Database System Implementation, Algorithms, etc.

**Zhejiang University**, Hangzhou, China

*Sep. 2015 – Jul. 2019*

- Bachelor of Engineering in Computer Science, **Major GPA: 3.92/4.00**, The Scholarship for Outstanding Merit (top 5%)

## SKILLS

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- **Programming Languages:** C/C++, JAVA, JavaScript, Golang, C#, Shell, HTML/CSS, Python, SQL, Haskell, PHP, Ruby, Perl
- **Development Framework and Tools:** ReactJS, AngularJS, Spring Boot, flask, Maven, Apache, AWS, Nginx, Spark, Tomcat, JUnit, Webpack, WebSocket, Redis, RabbitMQ, jQuery, Ajax, MySQL, SQLite, PostgreSQL, SQL Server, MongoDB, MyBatis

## INTERNSHIPS

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**Software Development Engineer, Service Engine Team, Google**, Mountain View, CA

*Mar. 2020*

- Internship offer accepted. Canceled due to COVID-19

**Full Stack Web Developer, Office of Information Technology of Rice University**, Houston, TX

*May 2020 – Aug. 2020*

- Independently designed and built a data presentation website for Rice University Humanities School lectures, allowing more than 300 staff and students to manage research data. Each user can maintain more than 10,000 resources with different types
- Functionalized 12 web pages and 34 features and made users be able to search for resources within 2 seconds
- Developed frontend with Node.js, Webpack, ReactJS, and Redux, using Axios to send concurrent HTTP requests efficiently
- Adopted asynchronized job queue with Redis as L2 cache to deal with high concurrency issues and reduce response time
- Developed backend with Spring Boot and used MyBatis 3 to run dynamical SQL queries in MySQL with higher efficiency
- Deployed the system with Docker and Nginx as load balancer on Apache HTTP Server, providing high scalability

**Software Development Engineer, Beth Israel Deaconess Medical Center**, Boston, MA

*Jul. 2018 – Sep. 2018*

- Implemented a web application for the pancreatic cancer data management, providing concurrent data analysis features
- Developed frontend using Angular, styled it by Material-UI and visualized complicated data with three.js
- Developed MVC based backend using Maven and SparkJava and deployed it with Apache Tomcat server
- Adopted MongoDB for database to fully realize the CRUD functionality of the website and WebSocket to provide real-time event notifications as some user operations may take a long time processing data in the backend
- Created automatic test scripts using JUnit, making the code coverage more than 91%

**Software Development Engineer, Baidu, Inc.** Beijing, China

*Sep. 2017 – Dec. 2017*

- Implemented an Android application for speech recognition based on BaiduAI service, covering 12 different use cases
- Developed the application using React-native with Android Studio and Gradle, using SQLite 3 to store voice data
- Implemented backend using Express.js and designed RESTful data API endpoints

## SELECTED PROJECTS

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**Yalnix Operating System (<https://github.com/Yudai-Chen/Yalnix-Operating-System>)**

*Feb. 2020 – May 2020*

- Implemented a Unix-like Operating System for RCS421 simulated hardware and X11 Windows System, including both kernel and file system with all basic functionalities such as memory management, interrupt handling, context switching, I/O handling
- Achieved a process scheduler based on Round-Robin algorithm to support multiple processes with content switch and kernel/user mode protection, supporting multiple C programs loaded-in and executed concurrently
- Implemented memory management using virtual memory and single-level page table (as well as TLB), supporting both static and dynamic memory allocation in user processes
- Implemented system calls including Fork, Wait, Exec, Sleep, Brk, Open/Close, Read/Write, Link, Mkdir, ChDir, TtyRead, etc
- Created a terminal device driver, supporting keyboard input, multiple virtual monitors and multiple processes access
- Built a file system based on demand paging with an LRU cache, supporting multiple users running on top of the Yalnix kernel, supporting large file storage using indirect inodes

**Demeter Database (<https://github.com/Yudai-Chen/DemeterDB>)**

*Feb. 2020 – May 2020*

- Implemented a local relational database system which provides the basic functionalities similar to MySQL and SQL Server
- Developed the database system from scratch, with LRU cached buffer manager, record manager and B+ tree file organization
- Built a Flex-Bison SQL compiler and a RA optimizer to support SQL Semantic check and generate optimal executable plans
- Implemented a two-phase multi-way merge sort over records as the primary sorting algorithm in the database system