

# Nicholas Thong

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## Education

### University of Houston

Houston, Texas

B.S. IN COMPUTER SCIENCE AND ENGINEERING

Expected Dec. 2025

- Current GPA: 3.8
- Relevant Coursework: C/C++, Discrete Mathematics, Data Structures and Algorithms, Operating Systems, Intro to Computer Networks, Computer Organization and Architecture, Intro to Automata and Computation, Database Systems

## Skills

<b>Frameworks &amp; Libraries</b>	React, Node.js, Prisma, Tailwind, Socket.io
<b>Languages</b>	C/C++, Python, Golang, Javascript, HTML, CSS, Java
<b>Databases</b>	MySQL
<b>Tools and Software</b>	Unix, Git, Github, VSCode, Vercel, Oracle Cloud (Infrastructure)

## Projects

### Discord Clone

NEXT.JS 13, REACT, TYPESCRIPT, SOCKET.IO, PRISMA, TAILWIND, MYSQL

Aug. 2023 - Dec. 2023

- Developed a simplified Discord web application with key features including user authentication, server creation, invites, member management, 1:1 conversations & calls, and dynamic light/dark mode.
- Constructed a responsive, consistent, and user-friendly experience across all screens sizes and resolution using **Typescript** and **React**.
- Designed a unique, functional invite link generator and invite system, while also replicating the hierarchical organization of servers and channels by utilizing **UUIDs** and **Next.js** pages routing.
- Stored and managed conversations, messages, member profiles, member roles, servers, channels, and attachments by ORM using **Prisma** to connect to **MySQL**.
- Implemented real-time messaging along with infinite scrolling, allowing users to send & receive messages instantly using **Type-script** and **WebSockets**.
- Integrated real-time video-audio functionality utilizing **Livekit.io** and **WebSockets**.
- Deployed application using **Github** and **Railway**, with the capabilities of managing a load of 50 concurrent users during testing among colleagues.

### Multithreaded Real-Time Systems Task Scheduler

C/C++

Jan. 2024 - Mar. 2024

- Developed a **CLI tool** that simulates implementing an optimized **Rate-Monotonic Scheduling (RMS) algorithm** on a **multiprocessor architecture** using a partitioned scheduling approach for optimal priority task assignment in real-time operating systems.
- Reduced maximum response time of critical tasks, ensuring predictable and timely execution of high-priority tasks in comparison to EDF, by **15%**.
- Simulated improvement of system throughput in comparison to the Earliest Deadline First (EDF) algorithm, enhancing system performance under heavy workloads by **12%**.
- Demonstrated capability of meeting all deadlines under CPU utilization up to approximately **(78%)**, whereas other algorithms may fail.

### Chat Assistant

JAVASCRIPT, NODEJS, ORACLE CLOUD

Aug. 2020 - Jan. 2021

- Developed a chatbot that was utilized by companions, providing services such as alerts, reminders, and interactive queries using **Javascript** and **Node.js**.
- Implemented bot communication with dedicated servers, with ability to display statistics such as player count, world seed, world map, server version, server-address, and individual player statistics using **Discord.js**, **Node.js** libraries, and an **external API**.
- Expanded utility by creating polls, small mini-games, and displaying user statistics using **Discord.js** and **Javascript**.