ALBI ZHAKU

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EDUCATION

New Jersey Institute of Technology   **Newark, NJ**
B.S. in Computer Science   Expected: May 2027

- **Relevant Coursework:** Operating Systems, GPU Cluster Programming, Intensive Programming in Linux, Computer Networks, Database System Design & Management, Data Structures & Algorithms, Intro to Computer Systems, Intro to Data Science

PROJECTS

Distributed GPU Video Processor | C++, CUDA, MPI, OpenCV   Dec 2025

- Collaborated in a 2-person team to build a distributed video processor using MPI and CUDA
- Implemented manual frame partitioning and data distribution across MPI processes
- Developed CUDA kernels for per-pixel operations (grayscale, edge-enhance) with optimized thread/block scheduling
- Benchmarked execution modes on a 6,889-frame video: **148s serial CPU**, **68s MPI CPU (2.2× faster)**, and **18s CUDA (8.2× faster)**
- Integrated CUDA with MPI and analyzed hybrid performance; observed **5–20% overhead** from communication and synchronization during distributed GPU execution

Minecraft Beta 1.7.3 Server (mineserver-c) | C, epoll, Linux   May 2025

- Built a custom multiplayer game server from scratch using non-blocking sockets and `epoll`
- Implemented chunk loading, binary protocol parsing, player movement, and server tick loop
- Designed modular architecture for world state, entities, and configuration parsing
- Optimized networking throughput and client handling using event-driven I/O

CHIP-8 Emulator | C++, SDL   Dec 2024

- Built a full CPU interpreter implementing 35+ opcodes with accurate memory and stack management
- Integrated SDL graphics and input pipeline to run 20+ ROMs at 60Hz with consistent timing
- Optimized the instruction cycle for stable cross-platform performance

EXPERIENCE

Forte Pizzeria & Ristorante   Aug 2017 – Present
Shift Lead / Front Counter Associate, Randolph, NJ

- Supervised 4-6 staff per shift, coordinated front operations, and trained new employees on service and POS systems, resulting in improved team efficiency and customer satisfaction
- Maintain efficiency and accuracy under peak hours, ensuring positive customer experience and timely order flow

SKILLS

Programming: C, C++, Python, Bash, Java, JavaScript, PHP, x86-64 Assembly
Frameworks & Libraries: FastAPI, Express.js, Node.js, React.js, SDL, Pandas, NumPy, BeautifulSoup
Tools & Systems: CUDA, MPI, Git, Linux, GCC, GDB, Make, Vim, MongoDB, MySQL