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Peace Ishola

Software Engineer | Research Engineer

Ph.D. Candidate in Computer Science specializing in real-time 3D collaborative systems and immersive virtual environments. Proven expertise in designing and deploying adaptive communication frameworks using WebRTC and WebSocket for scalable VR applications. Published research in IEEE on hybrid communication protocols and state synchronization. Skilled in full-stack engineering (React.js, Next.js, Java, Python) for research-grade simulation environments. Passionate about translating experimental designs into production-ready systems that support real-time interaction and collaboration.

Skills

Programming: Python, Java, JavaScript, SQL, TypeScript, Bash
Frameworks: React, Next.js, Node.js, Express, Material-UI
Real-Time & Web Tech: WebRTC, WebSocket, Socket.IO, Three.js
Backend & DevOps: PostgreSQL, MySQL, RESTful APIs, Git, Supabase, Github Actions
Tools: Postman, VSCode, Storybook

Professional experience

Research Engineer - Real-Time 3D Collaborative Systems
Lab for Immersive Virtual Environments - Oklahoma State University
January 2021 – Present

- Led the design and implementation of a **hybrid WebRTC-WebSocket communication system** for scalable **real-time 3D collaboration**.
- Developed a **predictive state synchronization algorithm** that enhances responsiveness in **multi-user virtual environments**.
- Integrated Socket.IO for event-driven messaging and Supabase for session persistence, enabling **seamless reconnection and fault tolerance**.
- Engineered a **3D collaborative whiteboard** with **real-time drawing** and interaction in a browser-based environment, supporting educational and simulation use cases.
- Implemented **room-based partitioning and dynamic load balancing**, increasing system scalability for up to 50 concurrent users with minimal latency variance.
- Applied agile methodologies in prototyping, testing, and deploying **interactive 3D environments**, bridging academic research with real-world product development.
- Designed and implemented RESTful API endpoints in Node.js/Express to support user session persistence, object interaction logging, and whiteboard data storage.
- **Integrated PostgreSQL and Supabase for state storage**, role-based access control, and event history across rooms.
- Implemented structured logging and metrics collection for backend services to support real-time diagnostics and system monitoring.
- Developed schema validation and error handling middleware to ensure robust data flow from front-end to backend services.
- Conducted backend performance profiling and optimized WebSocket message handling to reduce CPU usage under concurrent load.
- Published research outcomes in **IEEE ICCIS 2025**, demonstrating the system's superior performance in latency, throughput, and synchronization accuracy over existing architectures.
    - Ishola, P., & Mailler, R. (2025). Hybrid WebRTC-WebSocket Communication and Adaptive State Synchronization for Scalable Real-Time 3D Collaborative Whiteboard. In Proceedings of the IEEE International Conference on Information and Communication Systems (Accepted)

Software Engineer - Front-End Systems & Stability
University of Phoenix – Phoenix, Arizona
May 2023 – August 2023 & May 2024 – August 2024

- Enhanced **front-end interaction flows** and **UI consistency** on the MyPhoenix student portal using React.js, Next.js, and Material-UI, contributing to a more robust user experience across time zones and platforms.
- Diagnosed and resolved **production-level rendering** inconsistencies and logic errors through component-level debugging and deep inspection of build/environment pipelines.
- **Refactored routing and base URL logic across the platform** to align with scalable navigation standards, improving modularity, load performance, and developer maintainability.
- **Upgraded Storybook** and **streamlined UI testing workflows**, supporting cross-version compatibility (Node.js 18+) and ensuring stability in component-based prototyping.
- Collaborated with cybersecurity teams to **identify and remediate front-end-side vulnerabilities**, contributing to secure-by-design development practices.
- Designed reusable utilities for evaluating complex enrollment logic, improving maintainability and supporting **condition-based UI rendering**.
- Employed Git (Bitbucket) for version control in a distributed team environment, contributing to code reviews and CI workflows.
- Assisted in designing backend-driven A/B test frameworks to evaluate UI/UX changes using custom analytics hooks and server-side flags.
- Supported full-stack development of session-related services (login, routing, token refresh) in a Next.js + Node.js architecture.

Teaching Assistant (January 2021 – Present)
SPUR (Software Programming Undergraduate Resources) – Oklahoma State University
January 2021 – Present

- Mentor undergraduate students in software development, guiding them through the design and implementation of real-world applications and academic projects using Java, JavaScript, React.js, and Next.js.
- Instruct and support beginner-level Java programming labs, introducing object-oriented principles, control flow, data structures, and debugging techniques.
- Provide code reviews and technical feedback to students, enhancing their problem-solving skills and ensuring adherence to clean coding standards and best practices.

Data Engineer
Integrity Super Mart
September 2017 – December 2020

- Employed Java programming to design and develop an **inventory control system**.
- Built a database for the product inventory with **MySQL database management system**.
- Perform periodic evaluations of the inventory control system to verify its optimal functionality and precision.
- The deployed inventory control system reduced processing time of inventory levels and order processing by 95% while completely removing systematic errors in calculating stock turnover rate and order fill rate.

Education

PhD Computer Science
Oklahoma State University – Stillwater, OK.
January 2021 – Present
MSc Computer Science
Oklahoma State University – Stillwater, OK.
January 2021 – December 2023