

# Xiaonan Shi, Ph.D.

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## EDUCATION

- **Georgia Institute of Technology** (Master of Science in Computer Science, GPA 3.9/4.0) **2022 - 2024**
- **New Jersey Institute of Technology** (Ph.D. in Environmental Engineering, GPA 3.9/4.0) **2017 - 2022**

## CORE COURSES

Graduate OS | Software Analysis | Software Dev Process | Robotics: AI Tech | Grad Algorithms | Computer Net | Info Security

## SKILLS

- **Programming Languages:** Python, Java, JavaScript, C, C++
- **Web Development:** HTML5, CSS3, JavaScript, React.js, Node.js, Express.js
- **Database Management:** MySQL, PostgreSQL, MongoDB
- **Machine Learning:** NumPy, matplotlib scikit-learn, and pandas
- **Other Technologies:** Git, GitHub, Docker, AWS, RESTful APIs, GraphQL, WebSockets

## SELECTED PROJECTS

1. **Development of a Custom Knowledge-Based Generative AI Chatbot**
  - Developed a custom generative AI chatbot to answer user queries using **OpenAI APIs**, **NumPy**, **pandas**, **HTML**, **CSS**, **JavaScript**, and **Python**.
  - Integrated advanced **NLP** techniques to generate embeddings and perform semantic searches.
  - Created a robust and scalable solution for real-time interaction, ensuring high relevance in responses.
2. **NFT Marketplace Development**
  - Built a fully functional NFT marketplace inspired by OpenSea using **React**, **Motoko**, **Internet Computer**, **Smart Contracts**, **IPFS**, **Blockchain**, **JavaScript**, **HTML**, and **CSS**.
  - Ensured secure on-chain storage of NFT data.
  - Developed a comprehensive e-commerce platform for NFTs, handling transactions, user collections, and listings.
3. **Multi-threaded Client-Server System with Proxy and RPC Services**
  - Created a concurrent file retrieval system with efficient handling of multiple requests using **C**, **C++**, **libcurl**, **gRPC**, **Protocol Buffers**, **System V IPC**, **POSIX IPC**, **multi-threading**, and **mutexes**.
  - Integrated **web proxy** functionality to extend the system's capabilities.
  - Implemented a robust caching mechanism to optimize data retrieval and storage.
4. **Market Simulator for Portfolio Management**
  - Developed a market simulator for real-time portfolio management using **pandas**, **NumPy**, and **matplotlib**.
  - Implemented comprehensive performance metrics and visualizations for thorough evaluation.
  - Incorporated transaction costs and market impacts to simulate realistic trading conditions.
5. **Advanced Software Analysis and Testing Toolchain**
  - Developed runtime error detection and code coverage tools using **C**, **C++**, **Java**, **TypeScript**, **LLVM**, **Z3 Solver**, and **KLEE**.
  - Built and enhanced a mutation-based fuzzer for **automated testing**.
  - Implemented static program and constraint-based analysis with **Z3 solver**.

## CERTIFICATIONS

AWS Certified Cloud Practitioner | AWS Certified Solutions Architect – Associate | J.P. Morgan - Software Engineering Job Simulation

## PUBLICATIONS

<https://scholar.google.com/citations?user=s-80-PYAAAAJ&hl=en>

15 Journal publications, 2 Book chapters, and 2 patents(commercialized). **Total citation: over 1100**

