# Tianyu Liu

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## EDUCATION

**New York University**, Master of Science, Computer Engineering | Expected: May 2026
*Relevant Coursework: Machine Learning, Deep Learning, Network Security, Real-time Embedded System Design, Big Data*

**New York University**, Bachelor of Science. Computer Science | Sep. 2020 - May 2024
*Relevant Coursework: Machine Learning, Web Design, Database, Data Management and Analysis, Data Structures, Statistics for Business and Economics*

## TECHNICAL SKILLS

*Programming Languages:* Python, Java, C, HTML, CSS, JavaScript, R, MATLAB
*Tools:* GIT, Docker, TensorFlow, Tableau

## PROFESSIONAL EXPERIENCE

*Research and Development Intern*, **Chongqing Airlines Co. Ltd.;** *Chongqing, China* | Jun.- Aug.2021
- **Web Development:** Developed a web application using Java with SpringBoot, implementing core functionalities including user registration, login, password encryption, and input validation.
- **Backend Integration:** Integrated multi-step database interactions to support user authentication and data management.
- **UI Enhancement:** Improved graphical user interface using HTML and CSS, enhancing front-end responsiveness and overall user experience.

*Summer Intern*, **China Minsheng Bank Corp., Ltd. Chongqing Branch;** *Chongqing, China* | August 2023
- **Data Security Automation:** Developed a batch file extraction and encryption script to safeguard sensitive customer information and prevent data leakage.
- **Client & Credit Services:** Assisted clients in utilizing financial products for transactions such as payments and acceptance bills, while supporting new credit applications and renewals, including loan issuance and credit limit approvals.
- **System Optimization:** Identified inefficiencies in internal systems due to intranet-internet isolation; recommended establishing a secure proxy gateway or internal API bridge to enable selective data exchange across network boundaries.

*Summer Intern*, **Shenwan Hongyuan Securities Co., Ltd. Shanghai Branch;** *Shanghai, China* | June – July 2024
- **Data Analysis:** Conducted rigorous analysis using SQL and Python to uncover market inefficiencies and arbitrage opportunities, contributing to portfolio diversification and risk reduction.
- **Factor Modeling:** Engineered trading model inputs by coding relevant financial factors and signals in Python.
- **Strategy Monitoring:** Monitored and adjusted simulated trading algorithms in response to market news and macroeconomic events to ensure robustness under high volatility.

## ACADEMIC PROJECTS

**React Projects** *Self-learning project* | August 2024
- **Component Development:** Built 25+ reusable UI components using React, including accordion menus, QR code generators, API-driven autocomplete search bars, GitHub profile finder, and restaurant shopping cart modules.
- **React Proficiency:** Gained practical experience with core React Hooks such as useState, useEffect, useMemo, and useCallback to optimize component behavior and performance.
- **Cloud Deployment:** Experimented with deploying the project on AWS using Lambda and S3, exploring serverless hosting strategies.

**Predicting Stock Price Trends with Candlestick Charts** *Capstone project of NYUSH* | Sep. – Dec. 2023
- **Market Data Analysis:** Collected and processed historical A-share and U.S. stock data; visualized trading behavior using candlestick charts and daily indicators via bar plots.
- **Computer Vision Modeling:** Applied CV techniques to extract patterns from candlestick chart images and transformed them into feature vectors for training a Variational Autoencoder (VAE) in Python.
- **HPC Deployment:** Utilized NYU Green High Performance Computing cluster to execute training workloads and fine-tune VAE model parameters for improved convergence and accuracy.

**Operating System Projects in C** *Course project of NYU* | Sep. – Dec 2022
- **Systems Programming:** Completed three intensive C-based projects covering dynamic memory management, variadic functions, and run-length encoding (RLE) encryption/decryption.
- **Custom Shell Development:** Built a functional Unix-style shell supporting piping, I/O redirection, and built-in commands such as *cd*, *ls*, and *exit.*
- **File System Recovery**: Reconstructed deleted files from FAT32 file systems by parsing low-level disk structures; all projects delivered with 100% functional accuracy.

## VOLUNTEER

**19th Annual Session of Global Forum on Human Settlements** | October 23 - 24 2024
United Nation Headquarters, New York, United States
- **Guest Coordination:** Managed on-site registration and check-in process for over 300 guests, ensuring smooth and efficient venue entry.
- **Multimedia Operations:** Operated audiovisual systems for sub-venue sessions and banquet award ceremonies, ensuring seamless playback and timing of presentations and videos.