Jaehoon Song

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Software Engineer with 4+ years of full-stack and systems architecture experience across web, desktop, and mobile platforms. Combines proof-based CS foundation and algorithmic problem-solving skills to build efficient and reliable systems.

Education

Georgia Institute of Technology | Atlanta, GA *Dec 2025*
Bachelor of Science in Computer Science GPA: 3.87/4.00

- Built a proof-based theoretical foundation through coursework in calculus, linear and abstract algebra, probability & statistics, discrete mathematics, data structure & algorithms (DSA), automata & complexity theory, and number theory with cryptography applications (Security)
- Developed advanced problem-solving and algorithm design skills, including statistical methods, finite-state-machine (FSM)-based algorithms, and online algorithms
- Gained frontend, UI/UX, and graphics development experience: D3.js data visualization, OpenGL, and Unity game development by Agile's Scrum framework for project management, object-oriented design patterns and principles, design documentation, and strong cross-team communication skills.
- Achieved Dean's List recognition, College of Computing, 2022

Gwinnett Technical College | Lawrenceville, GA *May 2021*
Associate of Applied Science in Computer Science GPA: 3.96/4.00

- Built a practical software engineering foundation integrating desktop, web, and mobile development through coursework in IT Analysis, Project Management, and Advanced Systems Project
- Completed coursework in IT Analysis, Project Management, and Advanced Systems Project
- Developed expertise in Linux customization, operating systems, C/C++ programming, concurrency/multi-threading, memory management (heap & stack), device I/O management, software architecture (MVC), TCP/IP fundamentals with socket programming, SOAP web services over HTTP, WebSockets, Java Beans, Servlets, JSP, network configuration
- Gained proficiency in application development: Java for enterprise systems and database management (Oracle SQL, MS Access, Apache Derby), Python for data analysis and media processing
- Earned Java Programmer Certificate, Honor's List, and Award of Merit

Experience

Columbia Academy | Duluth, GA *Present*
Freelance Lecturer (1099 Contractor)

- Instructed mathematics courses (Calculus, Linear Algebra, Combinatorics), science courses (Physics), and computer science courses (AP Computer Science A in Java, AP Computer Science Principles in JavaScript and Python) following Georgia Tech CS 1301 and CS 1331 curriculum standards for high school students since September 2024
- Designed coding challenge problems and implemented comprehensive unit tests to evaluate algorithmic correctness and programming proficiency
- Developed comprehensive SAT Summer bootcamp materials using customized LaTeXenvironments and commands for professional typesetting and released them as open educational resources under the CC BY-NC-SA 4.0 license

Georgia Institute of Technology, School of Physics | Atlanta, GA *Dec 2024*
Teaching Assistant (TA)

- Operated lab sessions for PHYS 2211 under Emily Alicea-Muñoz from January 2023
- Assisted students in completing lab assignments and understanding statics/dynamics in physics including kinematics, dynamics, thermodynamics, energy, and momentum
- Earned Faculty Honors from School of Physics, 2023

Georgia Institute of Technology, School of Computer Science | Atlanta, GA *Dec 2022*
Undergraduate Teaching Assistant (UTA)

- Conducted office hours and recitation sessions for CS 2050 to support student learning in discrete mathematics (set theory, proofs, induction, combinatorics, graph theory, number theory, and cryptography) under the supervision of College of Computing faculty
- Prepared and edited problem sets, solution guides, and recitation handouts using LaTeXand coordinated with instructors to align recitation content with course objectives

SK C&C USA | Suwanee, GA *Sep 2021*
Software Engineer/Developer

- Contributed to the MES system for SK Global Battery manufacturing, developed in WinForms (.NET Framework), focusing on networking components and PLC communication via XML data exchange protocols
- Designed user documentation to help factory workers understand and operate MES user interfaces effectively
- Configured virtual machines, Windows OS, and hardware systems using Ethernet networking and transfer protocols
- Maintained data consistency across factory plant systems and managed Oracle Database operations

Projects

Greater Youth Collaborative Opus (GYCO) | Remote *Oct 2025*
Web Developer (Freelance) </>

- Developed a complete static website for Korean-American youth orchestra institution following MVC architecture with SASS for Bootstrap customization and Vanilla JavaScript
- Designed build automation scripts, intuitive UI/UX with SNS integration, article management system, and content management capabilities for student administrators to understand web development principles and maintain the website independently

TradingBot (Automated Trading System) | Remote *May 2025*
Software Engineer/Developer </>

- Designed and implemented an automated trading system using low-level HTTP library (`request`) for direct API connectivity with brokers/exchanges using JSON data exchange format
- Built a scheduler-driven concurrency engine to continuously initiate and coordinate trading logic
- Implemented accounting python modules for real-time asset tracking, debit/credit (cash-to-equity) monitoring, rebalancing of index stock (SPY, QQQ, etc.), and dividend option strategies
- Built order management, error handling, logging, and reconciliation routines to maintain accounting integrity and auditability

Grady Health System (Not Publicly Available) | Atlanta, GA *May 2024*
Software Engineer/Developer </>

- Developed a heart-care application to reduce hospital readmissions by detecting complications early from patient-reported data and following the Scrum framework of Agile as a year-long capstone project coordinated with Dr. Muling Lin from College of Medicine, Emory University
- Led system architecture design and comprehensive design documentation
- Developed a local database (Java, prototype only, build automation by Apache Ant) with minimal UI, integration with a RESTful Flask web server over HTTP, and socket connection for private network configuration/security using Apache Derby database engine to customize SQL rules for specific medical use cases
- Implemented statistical analysis modules (Python) for patient-reported data trends and alert systems for clinicians
- Delivered mobile app for patients and secure web portal for clinicians, with intellectual property assigned to College of Medicine, Emory University

Skills (Extended)

Language Proficiency: English, Korean (Native), Japanese (Intermediate)
Programming Languages (Application Development): Java/Kotlin, Python, C/C++/C#, JavaScript/Node.js, React
Domain-Specific Languages: Bash for Linux (Linux Customization), Zsh for OS X, Batch for Windows, Perl and AWK for text processing and system administration, JSON/XML for data exchange, HTML/CSS for web, LaTeX for typesetting, MATLAB and Mathematica for numerical computing
Databases with SQL: Apache Derby, Oracle, SQLite, Microsoft Access
Frameworks and Libraries: QT, PyQt, JavaFX, Java Swing, WinForms (.NET Framework, C#), Unity (C#), React, Node.js, Flask (RESTful web services over HTTP), FastAPI, D3.js, OpenGL, SASS (Bootstrap customization), Web hosting (Apache Tomcat, AWS), Java Beans, Servlets, JSP, WebSockets
Unit Testing Framework: JUnit, PyTest, Unittest, Unity Test Framework, NUnit (C#) for automated unit tests
Software Engineering: Object-Oriented Design Patterns and Principles, Factory Design Pattern, Builder Design Pattern, Prototype Design Pattern, Singleton Design Pattern, Iterator Design Pattern, Mediator Design Pattern, Observer Design Pattern, Strategy Design Pattern, Visitor Design Pattern, Adapter Design Pattern, Decorator Design Pattern, Composite Design Pattern, Facade Design Pattern, Proxy Design Pattern, KISS (Keep It Simple, Stupid) Principle, DRY (Don't Repeat Yourself) Principle, Single Responsibility Principle, Open/Closed Principle, Liskov Substitution Principle, Interface Segregation Principle, Dependency Inversion Principle, Software System Architecture (MVC/MVP/MVVM), Design Documentation, Software Development Life Cycle (SDLC), Project Management, Agile Development Methodology, Scrum Framework,

Cross-Team Communication, UI/UX Design, Graphics Development, Problem-Solving and Analytical Reasoning, Technical Writing, User Documentation, Operating Systems, Concurrency / Multi-threading, Memory Management, Device I/O Management, error handling, logging, TCP/IP fundamentals, Socket Programming, Network configuration, Ethernet networking and transfer protocols, WebSockets, XML-based PLC communication protocols, Low-level HTTP for RESTful API connectivity, SOAP web services over HTTP, system architecture and design documentation, Data analysis, media processing, CMS (content-management systems), Build automation scripts

Industrial Systems: MES (Manufacturing Execution Systems) development and maintenance, factory system integration, user documentation

Developer Tools: Version Control (Git), GitHub/GitLab, Virtual Machines and Containers (Docker), Agile workflow tools (Jira and Confluence), IDEs and Text Editors, Build Automation Tools (Apache Ant, Maven, Gradle, Poetry, npx, custom build scripts)

Other Software Tools: MS Office (Word, Excel, PowerPoint, Outlook), Adobe Design Tools, Cloud Services

Algorithmic and Theoretical Foundations: Data Structures and Algorithms (DSA), Finite-State Machines (FSM), Online Algorithms, Algorithm Design and Analysis, Statistical Analysis, Automata Theory, Complexity Theory, Number Theory, Cryptography, Discrete Mathematics, Probability and Statistics, Linear and Abstract Algebra, Calculus, Physics, Statics/Dynamics, Kinematics, Dynamics, Thermodynamics, Energy, Momentum

References

Available upon request.