**Professional Summary**

Innovative software engineer with a Master’s in Machine Learning and Artificial Intelligence and over two years of professional experience building high-performance AI-driven systems. Expert in C++, Python, and neural network implementation. Skilled in reinforcement learning, algorithm optimization, and solving complex technical challenges.

**Technical Skills**

* **Programming Languages**: C++, Python, C#, Java, SQL, Perl, Javascript, HTML, css/xml, F#, PHP, Kotlin,
* **AI/ML Technologies**: Neural Networks, Reinforcement Learning, Q-Learning, Markov Decision Processes, TensorFlow, PyTorch
* **Development**: Unreal Engine 5 (5.2–5.5), Scripting, AI/NeuralNetworks, Procedural Content Generation, Neural Network integration, Mobile Development, Shell scripting, Linux, Databases
* **Tools & Platforms**: Visual Studio, Git, Perforce, Linux, AWS, Docker, Google Analytics 4
* **Technologies**: Multithreading, Network Programming, Shader Development, 3D Math, Data Pipeline Automation
* **Specialized Skills: Hardware/Software-Conscious Optimization, GPU Acceleration, Low-level Memory Management, Parallel & Multi-threaded Algorithms** : Applied low-level optimization in C++ and WASM to achieve millisecond latency in performance-critical systems.
* **Methodologies**: Agile (Scrum/Kanban), Code Reviews, Debugging, Performance Optimization

**Lead Software Engineer, TBX Umbrella | *Solution Architect & TBX Developer |*** *7/2025 – Present*

Spearhead software strategy and execution as **Lead Software Engineer** across **all affiliated entities** under the TBX corporate umbrella, unifying architecture, development, and delivery for TBX Solutions, TBX Innovations, and every subsidiary operation. Deliver adaptive, high-velocity systems that scale to any client-defined constraint—functional, technical, or operational—without boundary.

* Architected a High-Performance Car Platform ([tbxautogroup.com](https://tbxautogroup.com/)): Engineered a fully static, dealer-managed JAMstack site that delivers a dynamic, app-like experience. Achieved exceptional performance (93) with elite Core Web Vitals—0ms Total Blocking Time and 0 Cumulative Layout Shift—alongside near-perfect scores in Accessibility (96) and SEO (91), proving a cost-effective static architecture can rival complex dynamic platforms.
* Built a Production-Grade TMS ([shipwithtbx.com](https://shipwithtbx.com/)) from Scratch: Single-handedly developed a full Transportation Management System using React, Node.js, and Supabase. Core features include live GPS tracking, dynamic route optimization, and automated documentation.
* Drove Down Costs with Modern Architecture: Leveraged serverless and static-first principles to reduce hosting costs by 87% versus traditional deployments, while gaining enterprise-grade security and scalability with minimal operational overhead.
* Instituted Robust Engineering Practices: Established a high-quality software delivery lifecycle using Domain-Driven Design, Git-centric workflows, and zero-downtime releases, enabling rapid development of custom client solutions without technical debt.

**Local Automotive Shop (Contractor) | Solution Architect & Integrations Expert** | 9/2024 – 7/2025

* Built revenue and profit reporting dashboards using SQL and custom scripts.
* Integrated shop management software with a web-based scheduling platform via REST APIs.
* Configured and analyzed Google Analytics for the shop’s website to optimize customer engagement.
* Trained owner and staff on digital process automation and workflow efficiency.

**Professional Experience | Centuria (Contractor for National Oceanic and Atmospheric Administration)**

*Scientific Applications Programmer / Database Administrator (Security Clearance)*

Stennis Space Center, MS | 8/2022 – 8/2024

* Engineered a high-performance file retrieval system in C++ and Java, transitioning from FTP to HTTPS, reducing bandwidth usage with optimized hashmap-based algorithms.
* Automated large-scale data pipelines using Python and SQL, integrating netCDF datasets into databases, cutting processing time and ensuring data integrity for HFradar archives.
* Optimized real-time system performance with multithreaded C++ modules and enhanced Linux cron jobs, increasing update frequency for mission-critical applications.
* Debugged complex system integration issues in C++, resolving asciiId errors, correcting and improving data processing efficiency.
* Led migration of four websites to Google Analytics 4, improving user engagement metrics through seamless data tracking.

**Initial Work Experience | Walmart :** *Sales Associate and Automotive Technician |* 7/2015 – 8/2022

**College AI and Game Development Senior Projects**

**3D Snake Game with Neural Networks**

*Unreal Engine 5.2, C++ | Published on itch.io:* [*https://jayblankenship.itch.io/snake3d*](https://jayblankenship.itch.io/snake3d) *| 2023*

* Developed and published a 3D Snake game featuring neural network-controlled NPC snakes, achieving an excessively high win rate that increases as time goes on in simulated environments using Q-Learning and Neural Network implementations.
* Optimized reinforcement learning algorithms, reducing computation time through efficient data structures, parsing and tokenization.
* Integrated real-time performance monitoring, enhancing gameplay responsiveness.  
  *Portfolio*:<https://github.com/JayBlankenship>

**Open-World Multiplayer Networked Survival Game**

*Unreal Engine 5.2, C++, Blueprint, SQL | 2023 – 2024*

* Designed AI-driven gameplay mechanics and character behaviors in C++ and Unreal Engine 5.2, reducing input latency through code optimization.
* Implemented networked multiplayer features with a SQL-backed database and Kotlin API, achieving reliable real-time data synchronization.
* Optimized build configurations and resolved preprocessor macro errors, enabling Live Coding and reducing iteration time.  
  *Portfolio*:<https://jayblankenship.github.io/>

**WebGL/OpenGL 3D Graphics Demo**

*WebGL, OpenGL, JavaScript | 2022*

* Created interactive 3D rendering applications with Phong and Gouraud shading, optimizing shaders to improve frame rates.
* Implemented camera movement and hierarchical transformations, enhancing rendering efficiency and user interaction.  
  *Portfolio*:<https://www.youtube.com/watch?v=tDC5uYWP46Y>

**Education**

**M.S., Machine Learning and Artificial Intelligence**

University of Illinois at Chicago, College of Engineering | 7/2023 – 12/2024

*Relevant Coursework*: Deep Learning, Reinforcement Learning, Large Language Models

**B.S., Computer Science**

University of Illinois at Chicago, College of Engineering | 5/2017 – 12/2021

*Relevant Coursework*: Algorithms, 3D Graphics Programming, Data Structures

**Prerequisites** : Elgin Community College

**Additional Achievements**

* Published AI-driven 3D Snake game on itch.io [(https://jayblankenship.itch.io/snake3d)](https://jayblankenship.itch.io/snake3d), showcasing neural network implementation for NPC behavior.
* Developed an optimized Unreal Engine 5.2 project, leveraging Live Coding tools to streamline Networked InventorySystem code development, achieving a reduction in iteration time and establishing a robust system architecture for the inventory.
* Automated National Oceanic and Atmospheric Administration data workflows, saving hours annually in manual processing.