Gurtej (Tej) Saini

Software Engineer
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Professional Experience

Schweitzer Engineering Laboratories, Pullman, WA — May 2024 – Dec 2024

Software Engineer Intern

- Developed a Flask app to generate and analyze Excel sheets based on inventory levels, supplier performance, and production time, improving purchasing review efficiency by 60%.
- Enhanced the reliability of data query services by 25% by proactively resolving bugs, writing exhaustive Pytest unit tests, and migrating the codebase to a newer Python runtime.
- Conducted stress tests on 20+ satellite-synchronized network clocks (SEL-2488), evaluating electromagnetic interference, temperature and humidity thresholds to ensure system robustness.
- Documented system architecture, design decisions, and data flow between services on Confluence for future reference and maintainability.
- *Utilized*: Python, Flask, Pandas, JavaScript, HTMX, Tailwind CSS, Pytest, Bitbucket, Confluence, Oscilloscopes.

Research Work, Moscow, ID — Oct 2023 – Apr 2024

Data Analyst Consultant

- Enabled 75% faster analysis of social accounting data for US states and counties by creating a D3.js-based visualization tool to highlight supply chains, dependencies between industries, and the flow of products.
- Optimized CSV/SQL to Neo4j conversion by building a bulk data import pipeline using Pandas, Cypher, and SQL.
- *Utilized*: Neo4j, D3.js, JavaScript, Python, Pandas, Cypher, SQL, Netlify, Quarto, Git.

Education

University of Idaho, Moscow, ID — *Expected Graduation: May 2025*

Bachelor of Science in Computer Science

- *Courses*: Computer Architecture, Embedded Systems, Operating Systems, Compilers, Algorithms and Data Structures, Computer Vision, Computational Biology.

Projects

Google Chrome Dino Game + Evolving Neural Networks — Spring 2025

- Trained the computer to beat my high score using machine learning and evolution without any human input.
- Configured a winning neural network by applying the NEAT algorithm to iteratively improve neural network topology and weights based on previous generation's performance.

Embedded Systems Lab — Fall 2024

- Soldered a custom-made PCB shield for the Arduino Uno R3 and built a combination lock, a temperature and humidity sensor, and a DC motor controller.
- Utilized FreeRTOS for scheduling tasks and handling interrupts to react to external events with minimal latency.

CHIP-8 Console Emulator — Fall 2024

- Developed a retro console emulator using C++, SDL, and Dear ImGui to run software designed for 1970s computers on modern hardware.

Skills and Interests

Skills: Python, Pandas, JavaScript, React, HTMX, Modern C++, Linux, Docker, Bash, Git, SQL

Interests: Homelabbing, Factorio, Shaders, Emulator Development, Physics Simulations, Cryptography