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Cal Nightingale

Software Engineer

www.calnight.in/gale
GitHub: CalNightingale
LinkedIn: cal-nightingale

Highly motivated Software Engineer ready to apply three years of industry experience to new opportunities. Excellent technical abilities, strong work ethic, and exceptional interpersonal skills.

Education

Bachelor of Science in Applied Mathematics & Computer Science — **2024 — Expected**
Brown University — *Providence, RI*

- Cumulative GPA: 3.90
- Relevant CS Coursework: Data Science, Cryptography, Graphics, Machine Learning, Systems, Data Structures & Algorithms
- Relevant Math Coursework: Linear Algebra, Probability & Statistics, Applied ODEs, Applied PDEs, Numerical Optimization

Technical Experience

Software Engineer — **August 2024 — Present**
Gradient Health — *Durham, NC*

- Designed & Implemented Cloud Optimized DICOM library; efficiently ingests DICOMs in many formats (zip, intelerad, etc.), creates series-level tars, and stores them in GCS. Estimated 80% GCS storage cost savings. Paper to be submitted to JOSS summer 2025
- Worked extensively in Apache Beam and GCP Dataflow to create pipelines for ingesting, de-identifying, & exporting 10s of millions of DICOM studies
- Exported over 8 million studies (500+ TB) in under 2 weeks for a single client

Research Assistant — Neurosymbolic AI Scene Synthesis — **Fall 2023 — Spring 2024**
Brown Visual Computing Lab — *Providence, RI*

- Assisted in the creation of a novel Neurosymbolic AI Scene Synthesis model; Paper submitted to SIGGRAPH in 2024
- Overhauled a deterministic scene synthesis model to output incremental binary masks of valid object placements
- Facilitated self-training of the neurosymbolic model by enabling it to interpret these masks

Software Engineering Intern — **Gap Year 2020-21, Summer 2022**
N1 Health — *Boston, MA*

- Implemented core N1 Data Lake pipeline, standardizing data ingestion process and reducing formatting errors at analysis time by 80%. Automated parsing and cleaning client data into csv, writing to SQLite databases & parquets, and uploading data to AWS S3
- Created utilities to collect and visualize aggregate statistics and run background analysis on parsed client data to expedite downstream data science process, decreasing time to create deliverables by 20%
- Decreased onboarding time by 1 week by refactoring N1 Data Lake and Model engine from their own repositories into separate python packages within N1 master repository, drastically simplifying code base and increasing code readability

Projects

Small Subway — **smallsubway.calnight.in/gale** — **Typescript, HTML/CSS, GitHub Actions**

- Metro simulation; presents the user with stations which they must connect to enable passengers to reach their destinations
- Utilizes a breadth-first search of the station graph to route passengers and trigonometric rendering algorithms to display trains

Voxel Procedural Terrain Generation — **github.com/CalNightingale/voxel-terrain-gen** — **C++, OpenGL**

- Implemented basic voxel rendering using OpenGL pipeline in addition to some rendering performance optimizations
- Implemented biome shape and type assignment using Voronoi Diagrams and Perlin noise

2D Game Engine — **github.com/CalNightingale/Hamboning** — **Java, JavaFX**

- Created a 2D game engine similar in structure to Unity; supporting sound, user input, sprites, behavior trees, and more
- Wrote a simple game, Hamboning, based on The Regular Show to showcase engine features

Filmsplice — **filmsplice.calnight.in** — **Python, Google OAuth API, ffmpeg**

- Wrote a utility to automatically download ultimate game film clips, splice them together, and upload them to YouTube

Skills

Languages	Python, C++, Java, C, Bash, MATLAB, HTML, CSS
Tools	Apache Beam, Git, SFTP, LaTeX, Vim, tmux, Markdown, Make, Jupyter
Database Systems	PostgreSQL, SQLite, AWS Athena & S3, GCP

Athletics

Division I Men's Ultimate Frisbee, Brown Ultimate — **2019 — 2024**

- Commit 20 hours per week to training, practice, competition, travel, and other obligations
- Honors: Placed 1st (2024), 2nd (2022), 3rd (2021), 5th (2023) in College Ultimate National Championships