Pengyu (Raine) Cui

Available upon Request | pca119@sfu.ca | Vancouver, BC, Canada
pkucuipy.github.io | github.com/pkucuipy | linkedin.com/in/pengyu-cui

EDUCATION

Simon Fraser University Sep 2024 – Apr 2026 (Expected)
Master's in Professional Computer Science | GPA: 4.11/4.33 BC, Canada

Peking University Sep 2019 – Jul 2023
Bachelor's in Data Science and Big Data Technology | GPA: 3.60/4.00 Beijing, China

TECHNICAL SKILLS

- **Languages**: Python, Java, HTML, CSS, JavaScript, C++, CUDA, SQL, Swift, Rust
- **Frameworks**: React, Django, PyTorch, Node.js, Express, GraphQL, RestAPI, TailwindCSS, SwiftUI
- **Utilities**: Bash, Git, GitHub, Docker, PostgreSQL, Redis, AWS, Azure

WORK EXPERIENCE

Amazon Web Services – *AWS | Java | SQL* May 2025 – Aug 2025
Software Development Engineer Intern Vancouver, BC

- Resolved performance bottlenecks in large-scale distributed storage systems experiencing traffic pattern variations in time-series workloads, significantly reducing service interruptions and enhancing capacity planning for enterprise clients.
- Developed automated solution processing large-scale log data streams through optimized SQL analytics, enabling proactive identification of system components requiring performance tuning.
- Built end-to-end system using Java enterprise frameworks and AWS cloud-native architecture (Lambda, SQS, DynamoDB, with CDK deployment), supporting high-throughput asynchronous processing; created interactive operational dashboard using React.
- Enhanced detection algorithms through advanced sampling methodologies achieving 20x query speed improvements with high accuracy rates; implemented a radix-trie-based algorithm for complex traffic pattern analysis.

PERSONAL PROJECTS

GPA Simulator – *React* May 2022 – Now
Personal Open-Source Project Maintaining on GitHub

- Developed an enhanced GPA utility with React, featuring elegant and interactive UI and seamless university API integration.
- Implemented CI/CD using GitHub Actions for automated deployment; achieved 100% test coverage.
- Attracted 1000+ active users during peak season, a total of 57,000+ visits since launch, well-regarded on the university forum.

Video Analysis App – *TensorFlow.js | FFmpeg* Sep 2024 – Dec 2024
Visual Computing Course Project Simon Fraser University

- Architected a full-stack video analysis framework that processes surveillance video in real-time, reducing hour-long video analysis time by 90% through concurrent web workers and TensorFlow.js GPU acceleration
- Engineered efficient frontend implementation with FFmpeg.js, enabling 12-hour videos analysis within 4GB memory limit
- Developed an interactive visualization interface showing a novel frame-energy plot, a semi-3D motion analysis, and an event list supporting automated event detection with both local inferencing (Florence-2 model) and OpenAI API integration

Population Migration Visualization – *SQL | React.js* Sep 2021 – Jan 2022
Research Project @ Peking University Beijing, China

- Architected a front-end visualization system highlighting geographical shifts in elite distribution linked to historical events.
- Performed data extraction on a semi-structured database processing 500,000+ entries using SQL and Python.
- Led the development of React and D3.js components for a unified, interconnected multi-view user interface.
- Accelerated key function by 300% with GPU programming, enabling 60 FPS rendering when user interacting.