Nicholas Fong

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EDUCATION

University of British Columbia — Vancouver, BC
Combined Major in Business and Computer Science — *Expected Graduation December 2026*
- **Key Courses**: Software Construction, Introduction to Relational Databases, Basic Algorithms and Data Structures, Introduction to Computer Systems, Business Statistics, Introduction to Software Engineering

EXPERIENCE

Data Engineer Intern — September 2025 - Present
Royal Bank of Canada — *Toronto, ON*
- Empowered **8 engineering teams** to improve **Apache Airflow DAG** reliability and accelerate **Spark ETL** iteration by **65%** through a Python testing framework with unit testing, integration testing, and dependency mocking
- Streamlined cross-team communication by **60%** by developing an automated reporting pipeline with **Jira REST API** integration and **S3 bucket** logging, enabling pre-deployment visibility across data engineering, QA, and product teams
- Achieved **50%** faster onboarding for new data engineers by designing a reusable **ETL testing framework** with comprehensive documentation and **CI/CD** workflows, enabling quick pipeline understanding and independent test execution
- Boosted test coverage and saved **15+ hours** per release by developing a prompt-driven test case generation tool using **LLM APIs**, enabling validation of ETL pipelines across multiple scenarios with automated **data quality** checks

QA Engineer Intern — January 2025 - August 2025
Royal Bank of Canada — *Vancouver, BC*
- Drove **60%** faster regression suite creation by architecting a distributed **Playwright** automation framework with **Docker** orchestration and Allure reporting, enabling parallelized, auto-generated test execution at scale
- Delivered a **250%** improvement in QA velocity by developing a keyword-driven automation POC with natural-language test creation and **Selenium WebDriver**, enabling non-technical members to author tests with full team adoption
- Reduced migration timeline by **67%** (6 to 2 months) by leading creation of an organization-wide agentic prompt repository that standardized modular prompt chains and workflows, enabling faster **AI-assisted automation**
- Saved **10 engineers** over **100 hours** per release by developing Python and **Selenium WebDriver** automation suites with **API testing**, regression testing, and dependency validation, strengthening end-to-end QA reliability

Software Engineer Intern — June 2023 – January 2024
Binggrae — *Vancouver, BC*
- Achieved cost saving of **20%** by implementing a **real-time analytics dashboard** using **Socket.io**, **REST APIs**, Recharts, and **Node.js** with Express, enabling data-driven optimization strategies across departments
- Addressed security concerns by implementing encryption and password hashing with **bcrypt** for user authentication in a digital marketing campaign, ensuring data protection and compliance with privacy standards
- Improved initial page load times by **30%** by implementing lazy loading, code-splitting with React.lazy, and image optimization techniques in a production web application
- Integrated **SEO best practices** including meta tags, semantic HTML, and sitemap generation, contributing to improved search engine visibility and a **40%** increase in organic traffic

PROJECTS

Narrify | *Demo Link* | *Python, FastAPI, Coqui TTS, ffmpeg, Docker, APScheduler, SQLite* — September 2025 – October 2025
- Automated generation of **15 daily YouTube videos** with **80%** average retention, reducing manual production from 10 minutes per video to fully automated **ETL pipelines** for content ingestion, **TTS** narration, and subtitle generation
- Fine-tuned **Coqui XTTS v2 deep learning model** for voice cloning using custom training pipeline with automated reference-audio preprocessing, chunked generation, and post-processing for high-quality speaker matching
- Built **FastAPI REST** endpoints and **APScheduler** task scheduling with SQLite database; containerized **microservices** with **Docker** for horizontal scaling, enabling fully automated high-throughput video production

FitFlow AI | *Github Link* | *React, Golang, PostgreSQL, Docker, OpenAI API, MediaPipe* — October 2023 – January 2024
- Created a **full-stack fitness application** using **React** and **Go** with **PostgreSQL** database, featuring health tracking, pose-based coaching, and **OpenAI API** integration for personalized recipe generation
- Applied **MediaPipe Pose Estimation computer vision** framework with real-time inference to detect and correct improper exercise form, enhancing user safety and reducing risk of injuries during workouts
- Integrated **OpenAI API** for personalized recipe recommendations using **prompt engineering** and **LLM integration**, with content moderation API to ensure safety for dietary restrictions and allergen information

TECHNICAL SKILLS

Languages: Python, Java, C++, Go, JavaScript, TypeScript, SQL, Scala, Rust, HTML5, CSS3, R, Bash
Frameworks & Tools: Next.js, FastAPI, Flask, Apache Spark, Apache Airflow, Docker, Kubernetes, TensorFlow
Cloud & Databases: **AWS** (EC2, S3, Lambda, RDS), GCP, PostgreSQL, MongoDB, Redis, Terraform, GitHub Actions, Jenkins