

# Haojie Ni

SOFTWARE ENGINEER

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## Introduction

I am a Software Engineer with a Physics degree from a top-tier Canadian university, who successfully transitioned from academic research to software development.

I am an ideal candidate for a Python Engineer role, having developed robust software engineering skills with a focus on **automation, cloud and data** during my tenure at HSBC. My background in physics projects at CERN has honed my research and debugging capabilities. Additionally, my side projects exploring Large Language Model (LLM) techniques have further expanded my technical expertise. These diverse experiences enable me to approach challenges with technical proficiency and efficiency.

## Skills

<b>Professional Experience</b>	<b>3 years of working experience</b> , plus 4 years of research work during university studies.
<b>Programming Skills</b>	<b>Proficient in Python and Linux</b> , intermediate in SQL and JavaScript, basic knowledge of Go and C++.
<b>Technical Tools</b>	<b>Airflow, Jenkins, Terraform, Django, Docker</b> , GitHub Actions, LLM APIs, Playwright, n8n, Make, QlikSense.
<b>Cloud</b>	<b>Certificated GCP Professional Architect</b> (BigQuery, Pub/Sub, Cloud SQL, Compute Engine), AWS, Azure.
<b>AI Skills</b>	<b>LLM API, Whisper Model, Prompt Engineering</b> , Gradio, HuggingFace.
<b>Domain Expertise</b>	<b>DevOps, ETL, Data Analysis</b> , Agile methodologies, Insurance domain, Physics, and Statistics.
<b>Languages</b>	<b>Fluent in English</b> , native Mandarin speaker, basic German language skills.

## Employment

### HSBC | Insurance Data Warehouse

Guangzhou, China

Senior Software Engineer

Mar.2022 - Apr. 2025

- **Daily Job as a DevOps Engineer**
  - Implemented infrastructure-as-code using Terraform and automated change processes on Jenkins.
  - Maintained software upgrades and patches on Linux servers, including Airflow, Jenkins, and PostgreSQL.
  - Provided first-line technical support, effectively troubleshooting and resolving critical production system issues.
  - Mentored team members by offering code reviews, Python programming guidance and sharing best practices in coding style and design.
- **Daily Job as a Data Engineer**
  - Developed and restructured data pipelines on Airflow, reducing dependencies and eliminating duplicate code.
  - Implemented best practices and optimized SQL to reduce infrastructure costs on Google Cloud, including BigQuery, Compute Engine, and Cloud Storage.
  - Visualized data and built dashboards and reports in QlikSense.
- **Key Project: A Release Framework to Improve Efficiency**
  - **Pain Point:** The team was preparing two separate code sets for each release due to hardcoded staging environment configurations in release packages.
  - **Solution:** Designed and developed a release framework using Jinja2 templates, which allowed the team to separate configurations from program logic.
  - **Result:** Increased team efficiency, reduced errors, and improved release frequency and team confidence.
- **Key Project: A GUI Application to Monitor Support Systems**
  - **Pain Point:** Support team members had to manually and frequently refresh two systems (shared email box and internal ticket system), which was inefficient and distracting.
  - **Solution:** Designed and developed a PyQt application that provides an interface to display support cases from both emails and tickets. Utilized email API for email data and Requests and Beautifulsoup for ticket data scraping, with automatic background data refreshing.
  - **Result:** Freed teammates from manual checking, allowing more focus on other projects while supporting user requests.
- **Key Project: A Web Portal for User Self-Service**
  - **Pain Point:** The team was manually maintaining contact information across multiple departments involved sending emails and spreadsheets to verify contact details, which was time-consuming and inefficient.
  - **Solution:** Designed and developed a web portal using Django that reads contact information from the database, enabling users to view and submit change requests directly.
  - **Result:** Streamlined contact update process, reducing processing time and IT support workload.

## Personal Side Projects

Below are the side projects I'm working on. I'm very proud of them as I learn a lot while working on them, and their functionalities solve real-world problems very well.

GitHub Repo: Aken-2019/celpip-llm-helper:

- **Introduction:** I'm developing an LLM-powered website to assist students in improving their English speaking and writing skills for the CELPIP exam. I used OpenAI's Whisper and GPT models to help improve my own practices. Inspired by this success, I am extending the application's functionalities to allow users to register and purchase LLM tokens.
- **Stack:** Django as backend, Svelte as frontend, and PostgreSQL as database. OpenAI's Whisper model is used for transcribing speech to text, and Anthropic's Claude model for revising text content. Tests are performed with Pytest and Playwright in GitHub Action.
- **Reflections:** The project helped me learn Svelte and dive into Django, which was very fulfilling.

#### GitHub Repo: Aken-2019/Scriberr\_LL:

- **Introduction:** This is a fork of the project rishikanthc/Scriberr. I am actively adding features to make it more user-friendly for language learners. Driven by my personal need to learn German from podcasts sentence by sentence, my customizations make this tool perfectly suited to my requirements.
- **Stack:** Go as backend, Svelte as frontend, and SQLite as database. OpenAI's Whisper model is used for transcribing podcasts. Docker images are built in GitHub Action and pushed to its registry.
- **Reflections:** I see this as an opportunity to learn Go and Svelte. Adding features is enjoyable, and I am satisfied with the current version.

## Education and Research

### University of Alberta | MSc in Physics

Edmonton, Canada

GPA 3.3/4.0, Thesis-based Graduate Program

Sep. 2019 - Sep. 2021

- **Research Project - Quantum Black Hole Search | ATLAS Collaboration:**
  - Cleaned and visualized ATLAS detector data to support research analysis.
  - Conducted hypothesis testing comparing theoretical predictions with experimental data.
  - Documented comprehensive research findings in thesis.
- **Scholarships:** Mitacs Globalink Graduate Fellowship, Teaching & Research Assistant Fellowship.
- **Extracurricular Activity:** Member of the university's ultimate frisbee club.

### Chongqing University | BSc in Physics

Chongqing, China

GPA 3.7/4.0

Sep. 2015 - Jul. 2019

- **Research Project - Particle Mass Measurement | LHCb Collaboration:**
  - Engineered features and optimized machine learning model parameters.
  - Analyzed and investigated the root causes of abnormal and outlier data points.
  - Implemented a Boosted Decision Tree (BDT) classification algorithm on LHCb data, focusing on signal fitting to achieve the most precise measurement of the  $\Xi_{cc}^{++}$  particle, resulting in a publication in Journal of High Energy Physics (JHEP).
- **Scholarships:** National Scholarship, Outstanding Student Scholarship.
- **Extracurricular Activity:** Vice-president of the university's ultimate frisbee club.

### McGill University | Summer Student

Montreal, Canada

Globalink Research Internship Program funded by Mitacs

Jul. 2018 - Oct. 2018

- **Research Project - nEXO Neutrino Experiment:**
  - Developed a graphical user interface (GUI) for controlling stepper motors using Python.
  - Contributed to the GUI development of a data collection device using C++, Qt, and Make.
  - Designed 3D-printed components for a neutrino detection experiment.