

HASSAN NASR HASSAN

Software Engineer — Remote, Open to Relocation

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Software engineer with 4+ years building production backend services, data pipelines, and real-time systems across federal and startup environments. Strong in Python and TypeScript, distributed systems on AWS, and shipping reliable services end to end.

Experience

Arcain

December 2025 – Present

Software Engineer, AI/Voice

Dubai, UAE

- Designed and shipped a dual-mode **FastAPI** voice service exposing streaming ASR and TTS **WebSocket** endpoints with **Silero VAD** barge-in detection and **OpenTelemetry** telemetry, deployed on **AWS EC2 GPU** instances to power real-time conversational AI
- Shipped a model fine-tune to **AWS** staging behind an environment-variable **rollback pattern** with full smoke and integration test coverage passing on first deploy
- Stabilized end-to-end latency under live load by debugging **WebSocket** session lifecycle issues, audio framing mismatches, and **GPU memory leaks**, and tuning VAD thresholds to eliminate barge-in false triggers

Innovation, Science and Economic Development Canada

August 2024 – Present

Software Engineer

Ottawa, ON

- Built incremental and full-load **ETL pipelines** (**Python, SQL, AWS Lambda, EventBridge, EC2**) moving data across **RDS, PostgreSQL**, and **Oracle** for production data systems
- Implemented **validation** logic and **stored procedures** supporting reporting for **10+ analysts** on **4M+ record** datasets, cutting validation effort by **50%**

Transport Canada

February 2023 – May 2024

Software Engineer

Ottawa, ON

- Built automated **Oracle-to-Databricks** data pipelines using **PySpark**, curating data across **945 projects** for **20+ program managers**

Defence Research and Development Canada

June 2021 – December 2021

Software Engineer Intern

Ottawa, ON

- Built a **machine learning OCR** pipeline to recognize typed, handwritten, and printed **Arabic** text using **Python** and Jupyter, adapting existing OCR research to a multi-format recognition task

Statistics Canada

January 2020 – August 2020

Software Engineer Intern

Ottawa, ON

- Built a user management module for the **Census 2021** application using **C#, ASP.NET**, and **Azure**, handling names, roles, and groups
- Generated synthetic demographic data and ran statistical tests in **Python** to support an automated data-generation tool

Projects

FocusFriend | *First Place, AI Tinkerers Hackathon*

Electron | **React** | **Python**

- Built a cross-platform desktop app that tracks digital activity and delivers **AI-driven** focus insights using computer vision, winning the “Most Useful Agent” prize

LLM Evaluation

TypeScript | **Next.js** | **Groq**

- Built a full-stack framework scoring **LLM** outputs on accuracy and relevancy across evaluation criteria

Technical Skills

Languages: Python, TypeScript, JavaScript, SQL, C#, Java

Backend: FastAPI, REST APIs, WebSockets, ASP.NET, Node.js, Serverless

Frontend: React, Next.js, Electron, Firebase, Stripe, Clerk

Cloud & DevOps: AWS (EC2, Lambda, EventBridge, S3), Azure, Docker, OpenTelemetry, Git

Data: PostgreSQL, Oracle, Databricks, PySpark, MongoDB, Redis

Education

Carleton University

June 2022

Bachelor of Software Engineering

Ottawa, ON