

# Dongwan Seoh

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## TECHNICAL SKILLS

**Languages:** Python, C/C++, R, SQL, Java, TypeScript & JavaScript, HTML & CSS

**Frameworks and Libraries:** PyTorch, FastAPI, Flask, React.js, React Native, Next.js, Svelte, SvelteKit, Tailwind CSS

**Developer Tools:** Git, GitHub, VS Code, Xcode, Linux, Vercel, Docker, Azure, Google Cloud Platform, Figma, Blender

## EXPERIENCE

### Software Engineer

Oct 2025 – Current

*UW Orbital — Satellite Mission Design Team*

- Developed front-end interfaces for mission control with **React** and wrote **unit & integration tests** for reliability

### Front-End Developer

Sep 2023 – Jun 2024

*SolveXchange — NPO for Empowering Student Entrepreneurship*

- Built a responsive front-end interfaces with **HTML**, **CSS**, and **JS**, improving navigation for **100+** active users.
- Implemented secure authentication and data workflows using **Flask**, **SQLAlchemy**, and **RESTful APIs**.

## PROJECTS

### Nebula — AI-Powered Note-Taking Mobile App |

Oct 2025 – Current

- Engineered a robust full-stack mobile app using **React Native**, **Xcode**, **FastAPI**, and **PostgreSQL**, enabling semantic search over **1,536-dim embeddings** and reducing note retrieval time via **IVFFlat indexing**.
- Implemented **OCR & AI** features using **Google Gemini & OpenAI API**, enabling handwritten text extraction and AI-generated summaries with **KaTeX rendering**; utilized agile development in a team of 4.
- Architected **secure authentication** with **Supabase Auth** and **JWTs**, enforcing **RLS** across **3 tables** for data isolation and deploying **Dockerized** backend to **Google Cloud Run** ready for production (WIP for App Store).

### Personal CRM — Manage Personal & Professional Relationships |

Sep 2025 – Current

- Built a full-stack application using **Next.js** and **FastAPI**, exposing **30+ RESTful API** endpoints for secure **CRUD operations**, **pagination**, and dynamic data fetching for contact, group, and interaction management.
- Designed a **normalized PostgreSQL schema** (**5+ tables**, junction relationships) with **database indexing**, **Pydantic validation**, and **parameterized queries**, improving query performance and preventing SQL injection.
- Optimized backend performance by adding **API response caching**, rate limiting with **SlowAPI**, and reducing redundant API calls by **60%**; implemented **matrix-based importance scoring** to rank relationships efficiently.

### Melodie.ai — Generate Coherent Folk Melodies |

Aug 2025 – Sep 2025

- Developed an **LSTM-based** neural network with **PyTorch** to generate folk melodies, reaching coherent sequences
- Designed probabilistic sampling system with temp. control and nucleus sampling methods, enabling variation.

### Discord Utilities Bot |

Jan 2022 – Feb 2023

- Scaled to **50+** global servers by developing **100+** unique commands with **asyncio**, **requests**, and **JSON**.
- Built with **discord.py** & **Replit DB** to store and update unique user information for currency and inventory.

## EXTRACURRICULAR INVOLVEMENT

### Sponsorship Director, Head of Finance

Dec 2024 – Current

*Ignition Hacks | *

Toronto, ON

- Expanded event participation to **260 attendees** by helping coordinate the execution of Ignition Hacks v.6.
- Raised **\$10,000** in sponsorships from Siemens, UWaterloo, Best Buy, CPA Ontario, (...) by forming partnerships

## AWARDS

### 2025 & 2024 Euclid Math Contest

Top **7.6%** among all contestants

### 2025 STEM Fellowship Big Data Challenge Finalist

*Published academic research paper: [Literary Factors Analysis](#) (DOI #: 10.17975/sfj-2025-001).*

## EDUCATION

### University of Waterloo

Sep 2025 - Current

*Bachelor of Software Engineering, Honours (2 scholarships awarded)*

**4.0/4.0 GPA**