

Daniel Haoxuan Zhang

Software Development Engineer

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[DanielScorpion.github.io](https://github.com/DanielScorpion)

SKILLS

- **Languages:** Python, Java, C, C++, SQL, HTML, CSS, JavaScript, Mermaid JS, Scala, Racket, LISP, Scheme, Turing, etc.
- **Technologies:** LLVM, TensorFlow, Node, React, Angular, Graphviz, Android, Hive, Spark, Hadoop, Docker, Git, etc.

EDUCATION

University of Waterloo

Waterloo, ON, Canada

Bachelor of Computer Science (4.0 GPA)

Sep.2017 – Apr.2022

Majored in Computer Science with Business Specialization Honours Co-op Program

RECENT WORK EXPERIENCE

IBM Corporation

Toronto, ON, Canada

Software Development Engineer

Mar.2024 – Present

- Developing the core of **Db2**, IBM's database engine solution product, within the **Query Compiler & AI Optimizer** team involving integrations of AI & ML, optimizers, rewrite engines, graph models, runtime interpreters, and more
- Recognized with IBM's **OTAA, Outstanding Technical Achievement Award**, for pioneering contributions and enablement to the AI & ML Query Optimizer in major GA release and driving IBM's Data & AI innovation in Db2; achieving **3x analytic performance speed up** compared to traditional heuristic/cardinality estimation optimizers
- Leading QC & AI's the triage & resolution of **25+ critical customer cases** while optimizing performance & reliability
- Contributing as IBM Db2's lead representative for organization for the **Scientific Research & Experimental Development (SR&ED) program**, Canada's largest federal tax incentive program for industries, financing IBM with **\$10+ million annually**; spearheading innovations, technical documentation, R&D claims, and funding initiatives
- Leading development and implementation of **ImaGenation**, IBM's Gen AI solution for **text-to-image** generation, **won** IBM Jumpstart program's **1st-place champion award** and integrating it into IBM's product ecosystem
- Engineering the introduction of **vector data type** in Db2 and enabling **AI** for query assistance & data retrieval

Intel Corporation

Toronto, ON, Canada

FPGA Software Development Engineer

May.2022 – Mar.2024

- Engineering open-access FPGA technologies for products including **OneAPI, CoreDLA, DPCPP, SYCL, HLS & OpenCL**
- Working within multiple High-Level Design teams focusing on **artificial intelligence & deep learning neural accelerator, core datapath compiler, open-access system integration software** and **data reporting & usability**
- Instituted **10** new additions of **SPIRV-Registry compiler extensions** to Intel's and Khronos Group's GitHub repos
- Established the compatibility for new FPGAs into OneAPI's compiler, including **Agilex 5 & 7, Cyclone IV** and **Max 10**
- Developed the **Board Awareness feature** for **CoreDLA** that enables dynamic & automatic Quartus **IP transferability**
- Cultivated the Abstract Netlist **full-stack project** with comprehensive JSON data to be OneAPI's new report output
- Implemented **Device Global feature** in system integrator to support **inter-module kernel memory communication**
- Streamlined system integrator codebase and achieved **67% reduction in code lines** for efficiency & maintainability

Huawei Technologies Canada

Markham, ON, Canada

Big Data Platform Developer

Jan.2021 – Dec.2021

- Implemented core features including **Heuristic Index, Memory Connector, Star Tree Cube, Spill to Disk, Query Optimizer** and others within openLookEng, Huawei's open-source data virtualization engine
- Improved **low-latency** performances by **over 60% for iceberg queries** with select multi-threaded query performances using tables with **10+ billion data entries**
- Integrated concepts of data preloading; supported **Bitmap, Minmax, Bloom, BTree** and **customizable** index types, split, strip and row filtering, functional and logical operators, and fail-safe record load and delete mechanisms

CGI (Consultants to Government and Industry) Incorporation

Markham, ON, Canada

Developer

Sep.2019 – Apr.2020

- Developed Wealth360 platform Java applications and pioneered over **90% of the rigorous Mockito infrastructures**
- Transformed crucial **multi-thread programs** to use volatile variables and classes to enhance memory access safety
- Innovated **module virtualization** throughout the backend mainframe to improve code scalability and reusability