Ke Li

(780)-885-0852 | kegrad2023@gmail.com | Toronto, ON, Canada
damianli.com | Linkedin

EDUCATION

University of Toronto   Toronto, ON

Master of Engineering in Computer Engineering & Identity, Privacy and Security (IPS) *Jan. 2024 – May 2026*
- Coursework: Computer Security, Cloud Computing, Deep Learning & Neural Network, Parallel Programming, Performant System with Rust
- GPA: 4.0/4.0

University of Alberta   Edmonton, AB

Bachelor of Science in Computer Science   *Sep. 2019 – Aug 2023*
- Coursework: Operating System, Computer Networks, Computer Architecture, Web Development, Mobile App Development, Database Management, Machine Learning, Agile Methodology
- Awards: *Dean's Honor Roll (22-23)*

EXPERIENCE

Database Kernel Engineer   Dec. 2024 – Present

Ant Group, OceanBase Department • Internship   *Shenzhen, China*
- Design and develop **SQL native expressions** and **DML** statements for array, vector, and roaring bitmap types in **OceanBase**, ensuring support for various analytical processing use cases.
- Developed SQL and Unit Tests to validate the correctness of array and roaring bitmap DDL, DML statements, and SQL expressions while analyzing performance bottlenecks.
- Collaborated with PM to refine use cases, prioritize features based on functionality and performance needs

Student Developer   Jan. 2023 – Apr. 2023

University of Alberta ALT Lab • Freelance   *Edmonton, AB*
- Developed a website that generates interactive word graphs based on Cree words and their domains using React, D3.js and Docker.
- Utilized Jest for unit testing and Cypress for E2E testing.

Backend Engineer   May 2021 – Aug 2021

Nandou Six Star System integration Co., LTD • Internship   *Wuhan, China*
- Wrote backend code that handled HTTP requests using Postgresql, Django REST framework and Nginx.

PROJECTS

VeloxDB Github *Doc*   Aug. 2024 – Nov. 2024
- Built a high-performance **Key-Value Storage** Library from scratch using **LSM-Tree structure**, support highly customizable database operations API and storage of basic C++ data types as keys and values.
- Implemented **Memtable** module (L0) using Red-Black tree for in-memory key-value storage and **PageManager** module for managing data layout in Disk/SSDs.
- Using **Singleton** Design Pattern to design Expandable **Buffer Pool** module with LRU, CLOCK and RANDOM Eviction Policies.
- Struct SST files with Static B+ Tree (L1+). Adding **Bloom Filter** for query optimization.
- Integrated **Protocol Buffers** for serialization and deserialization of SST files and index metadata.
- Wrote Unit Tests and benchmark for all modules using **Google Test** to ensure correctness and reliability.
- **Utilized**: GDB, C++, CMake, Google Test, Protocol Buffers

Distributed Linux Performance Monitoring System   Jun. 2024 – Jul. 2024
- Implemented the **Monitor** module using the Factory Design Pattern to create an abstract monitoring interface, including CPU status, system load, software interrupts, memory, and network monitoring.
- Built a Distributed System using **gRPC**; Deploying server on target machines and client library used by monitor and display modules, ensuring low coupling and high modularity.
- **Utilized**: GDB, C++, CMake, Docker, gRPC, Protocol Buffers, Qt

TECHNICAL SKILLS

Languages: C++, Rust, Python, C, JavaScript
Frameworks: OpenMPI, OpenCV, CUDA, React, Django, Cypress, Jest, Material-UI, Ant-Design
Developer Tools: GDB, CMake, gRPC, Protobuf, Qt, Git, Docker, Kubernetes, AWS
Libraries: TensorFlow, Scikit-learn, Pandas, NumPy, Matplotlib, Scapy, D3.js, ReactFlow, Mininet