Sunny Yasser

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EDUCATION

* **Polytechnique Montréal**   Montréal, Canada
  PhD in Computer Science (GPA - 4.0/4.0)   *Sep. 2024 - Present*
  Advisor: *Amine Mhedhbi at the Data & AI Systems (DAIS) Laboratory*
  Thesis Topic: *Optimizing Query Execution and Optimization on Modern Hardware*

* **Delhi Technological University**   New Delhi, India
  B.Tech in Electronics Engineering (Graduated with Distinction: GPA - 8.5/10.0)   *Apr. 2016 - Apr. 2020*

PUBLICATIONS

* **Beyond Quacking: Deep Integration of Language Models and RAG into DuckDB**
  Proceedings of the VLDB Endowment, 2025. Anas Dorbani, **Sunny Yasser**, *Jimmy Lin, Amine Mhedhbi*

PROFESSIONAL EXPERIENCE

* **Polytechnique Montréal**   Montreal, Canada
  Teaching Assistant   *Aug. 2024 - Dec. 2024*
  - ◇ **INF3170 - Files and databases**: *Fichiers Et Bases De Données*
    - Created automatic testing infrastructure on Gradescope for assignment evaluation.
    - Prepared SQL assignments to help students evaluate their understanding.

* **Cadence Design Systems**   Noida, India
  R&D Software Engineer   *May 2021 - Aug. 2024*
  - ◇ **Xcelium Simulation Performance Team**: *Project: Compile Time Optimizations for Verilog Designs*
    - Optimized the Nvidia design build process, leading to: (i) 10% less code generation; and (ii) $1.14\times$ speedups.
    - Designed lock-free graph data structure for Verilog module stitching to reduce delays due to simulation warnings.
    - Implemented a decompiler to verify new optimizations with early stops for long design build times (1+ days).
    - Maintained and deployed the decompiler to customer field engineers, leading to $5\times$ faster bug resolution times.

* **CitiBank**   Remote, India
  Software Engineer   *Aug. 2020 - May 2021*
  - ◇ **Global Risk Control**: *Project: Global Risk Monitoring Services*
    - Decomposed critical monolith system into a microservice architecture for horizontal scaling.
    - Ensured reliable modifications across multiple microservices using a two-phase commit protocol.
    - Improved risk modeling by designing a platform in which users provide business factors for automatic consideration.

* **Algosure Research LLP**   New Delhi, India
  Quant Developer Intern   *Dec. 2019 - Feb. 2020*
  - ◇ **Back Office Team**: *Project: High Performance Backtrading Platform for Algorithmic Strategy Evaluation*
    - Optimized multi-GB data ingestion pipeline leading to $2\times$ speedups.
    - Implemented an interactive library to plot trading data alongside calendars for faster data exploration.

PROJECTS

* **FFX (Fast Factorized Execution Library): Vectorized and Factorized Query Engine**   *Sep. 2024 - Present*
  - Project creator and lead: Responsible for all aspects of design, implementation, and verification.
  - Designed a vectorized query engine for modern hardware over factorized, i.e., compressed, relations.
  - Developed new join algorithms for factorized intermediate relations while ensuring vectorization on superscalar CPUs.

* **FlockMTL: Multimodal Data System (GitHub Stars: 248, Downloads: 500+/week)**   *Sep. 2024 - Present*
  - Contributor: Supported the implementation of critical features part of the PVLDB publication.
  - Added LLM support for different cloud providers including OpenAI services and Azure AI.
  - Introduced tutorials and notebooks over kaggle datasets to highlight system features and onboard users.

AWARDS

* **Cadence Innovator Award**   *May 2023*
  USD$100 in remuneration for solving a critical infrastructure yet customer-facing bug (Broadcom Inc.).

LANGUAGES & TOOLS

- **Programming Languages**: C++, C, Python, Java, SQL, Bash.
- **Databases & Cloud**: OracleDB, MySQL, PostgreSQL, Redis, Spark, Azure, GCP, AWS.
- **Tools & Frameworks**: PyTorch, Tensorflow, Scikit-Learn, RabbitMQ, Apache Kafka, SpringBoot, Docker.