

Abhinav Gyawali

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Education

Deerwalk Institute of Technology, Tribhuvan University
BS Computer Science and Information Technology

Oct 2019 – Aug 2024

- Grades: 74% (Transcripts [🔗](#))

Publications

Mihai Budiu, Leonid Ryzhyk, Gerd Zellweger, Ben Pfaff, Lalith Suresh, Simon Kassing, **Abhinav Gyawali**, Matei Budiu, Tej Chajed, Frank McSherry, Val Tannen. **DBSP: Automatic Incremental View Maintenance for Rich Query Language**. *The International Journal on Very Large Data Bases (VLDB)*

May 2025

We redefine Incremental View Maintenance and propose a solution using DBSP. DBSP is a simple but expressive language for describing computations over data streams. We give an algorithm for converting a DBSP program into an incremental program. Finally, we demonstrate how to build upon DBSP to support rich query languages such as SQL. A practical implementation of this lies in [🔗 feldera/feldera/sql-to-dbsp-compiler](#). [🔗 DOI: 10.1007/s00778-025-00922-y](#)

Abhinav Gyawali. **SocketDB: DBMS with Data Streaming via WebSockets**. *Deerwalk Journal of Computer Science and Information Technology (DJCSIT)*

Sep 2024

This paper describes my final year project, SocketDB, a lightweight SQL database that allows clients to subscribe to real-time updates through WebSockets. This paper argues that, in certain cases (like Facebook, Twitter and Instagram feeds), this approach would reduce the load on the application server from the constant requering of data by the client. Link: [Deerwalk Journal](#)

Experience

Feldera, Software Engineer

US, Remote
Dec 2023 – Date

- Implemented Feldera support for **sqlancer** [🔗](#), an automated testing framework that generates and evaluates Feldera SQL queries, uncovering **31 previously undetected bugs** [🔗](#).
- Enhanced Feldera's SQL compiler with support for **ARRAY** and **JSON** (Variant) types, associated functions, type casting, nullability handling, and query optimizations.
- Extended output connectors to enable writing real time query results to **Postgres** and **Redis**.
- Designed S3-backed checkpoint synchronization (upload/download) and a "standby mode" to accelerate recovery from S3 checkpoints.
- Designed and implemented the **Feldera Python SDK** [🔗](#), enabling programmatic control of pipelines, connector management, and integration with external systems.
- Authored technical articles on using Feldera for OpenTelemetry analysis, batch processing workflows.

Invisid, Software Developer

Germany, Remote
May 2022 – Nov 2023

- Developed [🔗 trackpad-rs](#) [🔗](#), a specialized library to extract precise trackpad and magic mouse data from Apple's *MultitouchSupport* framework.

- Engineered the MacOS version of the Invisid Client, collecting raw user input metrics for **continuous behavioral 2FA**.
- Redesigned and optimized the REST and gRPC server architecture, achieving a **25% improvement in processing times** and improving scalability for research deployment scenarios.

Flow Webinar, Security Engineer (*Part time*)

US, Remote
May 2020 – June 2021

- Executed comprehensive security assessments of the Flow Cloud Network and web applications, identifying and mitigating critical vulnerabilities.
- Streamlined AWS resource utilization, achieving a 32% reduction in server costs.
- Deployed an efficient logging and monitoring system utilizing Elasticsearch, AWS Lambda, and Kibana, enhancing incident response times by 30%.

Projects

DBSP

 [feldera/feldera/dbsp](https://github.com/feldera/feldera/dbsp)

- DBSP is an incremental computation engine where changes to the data set run in time proportional to the size of the change rather than the size of the data set.

SocketDB

 [abhizer/socketdb](https://github.com/abhizer/socketdb)

- SocketDB is a lightweight SQL database that enables real-time updates through WebSockets.

Nyx-lang

 [abhizer/nyx-lang](https://github.com/abhizer/nyx-lang)

- Nyx-lang is a statically typed, tree-walking interpreted language with a type-checking mechanism to ensure safety and correctness.

Loogle-rs

 [abhizer/loogle-rs](https://github.com/abhizer/loogle-rs)

- Loogle is a "Local Google" like search engine based on Term Frequency - Inverse Document Frequency (TF-IDF).

Monkey-rs

 [abhizer/monkey-rs](https://github.com/abhizer/monkey-rs)

- Monkey-rs is my take on the concepts from the [Writing an Interpreter in Go](#) book.

Awards & Certifications

DWIT Merit Based Scholarship	2021
DWIT Merit Based Scholarship	2020
AWS Educate Student Ambassador	2020
TedXMaitighar, Organizer	2019
Red Hat Certified Engineer (170-197-891)	2017
Red Hat Certified System Administrator (170-197-891)	2017

References

Mihai Budiu, Ph.D.
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Feldera
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Leonid Ryzhyk, Ph.D.
Chief Technology Officer
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Lalith Suresh, Ph.D.
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