BHARATHI RAMANA JOSHI

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EXPERIENCE

Backend Engineering **Sprinklr, Inc.**
Product Engineer *July 2023 to present*

- Worked on API design, implementation, and integration in Java using MongoDB, Elasticsearch, and Kafka.
- Responsible for developing and maintaining Sprinklr's email services utilizing SNS, SQS, Route53, and SES. Ensured implementation compliance with standard email protocols such as SMTP, IMAP, POP3, etc.
- Implemented OAuth 2.0 based account addition for Gmail and Microsoft Exchange.
- Responsible for developing and maintaining Sprinklr's Knowledge Base service suite. Implemented sandbox migration for Knowledge Base settings.

Compiler Engineering **MLIR, LLVM**
Open Source Contributor *July 2023 to May 2024*

- Implemented loop dependence analysis using MLIR's presburger arithmetic library in **C++**.
- Resulted in code contributions, bug reports & fixes to upstream MLIR. GitHub commits, phabricator patches.

Pure Logic Programming Research **Supervised by Dr. William Byrd**
Student Researcher *Dec 2020 to Dec 2023*

- Designed and implemented metaKanren, a relational interpreter for a miniKanren language that supports Constraint Logic Programming.
- Original research lead to multiple publications and talks.

Google Summer of Code **Haiku**
Student Contributor *May 2019 to July 2019*

- Extended the **btrfs** implementation of the Haiku operation system.
- Implemented file creates, stat updates, unlinking, fs info updates in **C++** and added Doxygen documentation.

TECHNICAL SKILLS

- **Programming Languages:** Java, C/C++, Racket, Scheme, Python, OCaml, Haskell, Coq, JavaScript.
- **Misc:** MongoDB, Elasticsearch, Kubernetes, Jenkins, Graylogs, Vim, git, LaTeX, Linux shell utilities.

EDUCATION

IIIT Hyderabad **B.Tech. and M.S. by Research in Computer Science**
CGPA: 8.58/10 *August 2019 to December 2023*

Relevant coursework: Principles of Programming Languages Algorithm Analysis & Design, Computer Systems Engineering-1, Design and Analysis of Software Systems, Program Verification

PUBLICATIONS

- *An Annotated Implementation of miniKanren with Constraints.* **Bharathi Ramana Joshi**, William Byrd. Published at miniKanren Track, ICFP 2022. Preprint link.
- *metaKanren : Towards a Metacircular Relational Interpreter.* **Bharathi Ramana Joshi**, William Byrd. Published at miniKanren Track, ICFP 2021. Preprint link. Talk link.

PROJECTS

- **imin:** nanopass compiler for a subset of **Scheme** to **x86-64** in **Racket** with a graph coloring register allocator and copy garbage collector. Implemented following a draft of the textbook *Essentials of Compilation*, made contributions to the textbook.
- **mk-dinterp**: **relational interpreter** for a subset of **Scheme** in **miniKanren** capable of program synthesis.
- **Search engine:** Implemented parser, indexer, and TF-IDF search for 40GB Wikipedia corpus in **C++**.
- **ohttp:** Server for a subset of HTTP using **socket programming** in **OCaml**.
- **SimpleFS:** file system in **C++** capable of file creation, deletion, read, write, mount, etc.

TALKS

- *metaKanren* (recording): presented our paper on miniKanren program synthesis using a self-interpreter at miniKanren workshop, ICFP 2021.
- Presented the Functional Pearl *La Tour D'Hanoï* (slides), explained wholemeal and projective programming.
- *Two Proofs in the Margin* (recording): explained proofs by infinite descent using special cases of Fermat's Last Theorem as an example.