

Krut Patel

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EDUCATION

University of Illinois at Urbana-Champaign

M.S. Computer Science

Illinois, USA

Aug 2023 – May 2025

Birla Institute of Science and Technology

B.E. Computer Science

CGPA: 9.71/10 (in top 1%ile)

Hyderabad, India

Aug 2017 – Jul 2021

EXPERIENCE

Microsoft Research India

Research Fellow

Bengaluru, India

Aug 2021 – Jul 2023

Worked with Dr. Kaushik Rajan and Dr. Aseem Rastogi on accelerating big-data systems using Just-In-Time code generation to execute SQL queries on native hardware.

- Built a multi-stage compiler in Rust with domain-specific optimizations for SQL
- Led the integration of the native query execution engine into the Azure Synapse suite to boost the performance of Spark jobs by up to 10x in some queries
- Developed tooling for the runtime, added Address Sanitizer support and hardware counter-based perf stats for profiling code and identifying system hotspots

Ecole Polytechnique Federale de Lausanne (EPFL)

Research Intern

Remote

May 2021 – Jul 2021

Joined the DIAS Lab headed by Prof. Anastasia Ailamaki, contributing to a JIT-compiled in-memory database. Built a scalable CSV Parser with the ability to generate schema-specialized parsing code. Explored an adaptive recompilation technique to enable faster integer parsing: if the first few rows in a column have numbers less than 100, we can dynamically generate a parser that can specifically handle 2-digits or fewer.

Microsoft Research India

Research Intern

Remote

Aug 2020 – Jan 2021

Joined the INSTalytics group led by Dr. Muthian Sivathanu, delivering performance improvements to SCOPE on Cosmos, the distributed big-data analytics platform powering Microsoft

- Enriched the Cascades-based query optimizer, making it aware of data partitions to produce more performant query plans
- Increased the number of hash join plans by determining when hash tables will fit in memory
- Led to a 5-6% reduction in overall query time, amounting to thousands of CPU hours saved per day

Microsoft India (R&D)

Software Engineering Intern

Remote

May 2020 – Jul 2020

Interned in the Microsoft Edge browser team, building a prototype for the **Natural Language History Search** feature, which enables users to search previously viewed pages with queries in plain English (“cake recipe from last week”). This has been rolled out for general availability now.

ACHIEVEMENTS

BITS Pilani Merit Scholarship

2017 - 2021 (All Semesters)

Conferred the Merit Scholarship for excellence in academic studies, ranking in the top 1%ile of the batch every semester

TECHNICAL SKILLS

Proficient (>10k lines): Rust, C++, Python, C, JavaScript **Familiar:** Go, Bash, Java, Scala, x86 ASM
Tools: GDB, Git, LLVM, Docker, Nginx, Flask, Django, ReactJS

EXTRACURRICULARS

CRUx – The Programming and Computing Club

Secretary

BITS Hyderabad

Apr 2019 – Mar 2020

- Coordinated various club activities, hosted programming competitions and hackathons
- Spearheaded the Girls Mentorship Program, a bootcamp aimed at increasing diversity by providing access to structured learning and guidance for various fields in programming