

SHIVANSH RAI

Software Engineer
Cloud Platform
SAP

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WORK EXPERIENCE

SAP

Software Engineer

Bangalore, India

Jul '19 - Present

- Involved in development of service brokers based on Open Service Broker (OSB) APIs for Redis and PostgreSQL services provided by AWS and Azure.
- Involved in maintenance of platform services for RabbitMQ and MongoDB.
- Developed features for interoperator, an open source Kubernetes operator based OSB service broker for provisioning services on Kubernetes clusters.

Google Summer of Code

FreeBSD Project

May '17 - Aug '17

- Developed an infrastructure to automate generation of tests for all the utilities in the FreeBSD base system.
- Discovered and fixed a bug in the implementation of `ln(1)` utility in FreeBSD ([link](#)).
- All code was reviewed and pushed to production.
- [github://shivansh/smoketestsuite](#)

Google Summer of Code

FreeBSD Project

May '16 - Aug '16

- Developed scripts for regression testing of TCP/IP stack implementation in FreeBSD.
- Used Google's packetdrill to develop test scripts.
- Discovered and reported a bug in the behavior of TCP stack implemented in FreeBSD-11.0-Release ([link](#)).
- All code was reviewed and pushed to production.
- [github://shivansh/tcptestsuite](#)

Full Stack Developer

NYC Office, IIT Kanpur

Sep '15 - May '17

- Contributed to a large scale polyglot web application built with an extensive technology stack.
- Designed and developed features for frontend using Angular and features for backend using Scala.

SKILLS

Experienced: C, C++, Javascript, Go, Python

Exposure: Haskell, Java, Scala, Android

Web: Express.js with Node.js, TypeScript, Angular, Django

Utilities: Shell Utilities, Git, Docker, PostgreSQL, Redis, Vim, L^AT_EX

EDUCATION

Indian Institute of Technology Kanpur Aug '14 - Jun '19

Bachelor of Science, Mathematics and Scientific Computing
Minor in Computer Systems

PROJECTS

MIPS Compiler for Go

[github://shivansh/gogo](#)

Course Project, Compiler Design

Jan '18 - Apr '18

- Implemented a compiler for a subset of Go language specification using Go.
- Generated lexer and parser using gocc toolkit.
- Added support for multiple return values, defer statements and recursion, among other features.
- Improved the generated MIPS assembly by implementing peephole optimizations and reaching definition analysis.
- Implemented a mark-and-sweep garbage collector.

B+ Tree Key Value Store

[github://shivansh/kiwi](#)

Course Project, Functional Programming

Jan '18 - Apr '18

- Implemented a B+ Tree based persistent key-value store in Haskell and Go.
- Analyzed the two implementations to draw comparisons based on metrics such as performance and memory footprint.

Statistical Bug Localization

[github://shivansh/bugLocate](#)

Course Project, Data-Driven Program Analysis

Aug '17 - Nov '17

- Explored the problem of statically localizing bugs in a given C program using statistical approaches.
- Designed an instrumentor using Rose compiler.
- Used the instrumentor to improve branch predictions by learning all branch correlations using Pearson's chi-squared test.

RTP Based Video Stream

[github://shivansh/videoStream](#)

Course Project, Computer Networks

Aug '17 - Nov '17

- Implemented a feedback driven Real-time Transport Protocol (RTP) based video streaming application.
- Designed and implemented a lock-free reader-writer model for manipulating shared message queues.

Distributed Shared Memory

[github://shivansh/dsm](#)

Course Project, Distributed Systems

Aug '18 - Nov '18

First-Fit Memory Allocator

[github://shivansh/malloc](#)

Self Project

May '19

OCR for Handwritten Digits

[github://shivansh/ocr](#)

Self Project

Feb '19

- Implemented an OCR for handwritten digits.
- Implemented backpropagation logic to achieve an accuracy of 95.7% on MNIST dataset.

Google Devfest

24 Hour Hackathon, Google India

Winning team

Oct '16

Takneek

Annual Web Dev Hackathon, IIT Kanpur

First runner-up

Nov '15