Animesh Pathak

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Education

2014-2018 **Bachelor Of Technology In Computer Science And Engg**, *IIIT Hyderabad*.

Work Experience

March'21-Present **Backend Engineer**, Starship Technologies.
May'19-Oct'20 **Distributed Systems Engineer**, Dgraph Labs.
August'18-April'19 **Site Reliability Engineer**, PhonePe.
May'17-July'17 **Summer Intern**, Samsung.

Projects

Starship Technologies **Efficient routing of robots with monitoring and alerts:** Improved the caching layer of the routing service which reduced average latency by 20%. Reduced memory footprints in the service by profiling. Added monitoring and tracing to the service for observability.

Dgraph Labs **Access Control Lists:** Dgraph is a horizontally scalable and distributed GraphQL database with a graph backend. ACLs provide a robust way to grant access of data to users. Designed ACL workflow which allows admins to give predicate based access to users for different operations(query, mutate, alter).

Dgraph Labs **GraphQL:** Added schema generator and validator for graphql. Dgraph understands graphql natively. Users just have to specify the data types, dgraph validates it and automatically generates a complete graphql schema containing all the input output types, query, mutation for all the data types.

Dgraph Labs **Ludicrous mode:** Added Ludicrous mode into dgraph which increased write throughput by 4x. It makes dgraph eventually consistent. Changes are serialized and propagated to cluster nodes via Raft then cluster nodes write them to disk asynchronously.

PhonePe **DC bootstrap:** Implemented infrastructure for life cycle management of baremetals in new data center. As soon as a server comes up it connects to dhcp and tftpboot servers for ip assignment and os installation. They get configured with necessary packages via saltstack states, ubuntu local repository was setup for custom package installation. Baremetals and vms used BGP over virtual interfaces for communication.

IIIT Hyderabad **Distributed File System:** Implemented a minimal distributed file system that is fault-tolerant and can store large files by slicing into pieces and putting chunks of the file at different nodes. Java RMI was used for communication and google protobuf was used for data serialization.

IIIT Hyderabd **Wiki Search Engine:** Implemented efficient and scalable search engine on Wikipedia data(60 GB wiki dump).Search engine outputs top certain relevant documents based on search query. Implemented a multi-threaded indexer that indexes around 60GB or data in around 5-6 hours with index size around 14-15GB. Then dense encoding was done for faster retrieval. Every search query can be executed in 3-4 disk seeks.

IIIT Hyderabad **Compiler for Decaf:** Built a compiler for Decaf language specified by MIT. Built a Lexical Analyzer using Flex, Semantics Analyzer using bison and generated Intermediate Representation of Code using LLVM.

Achievements

2017 Secured rank 2 in hackathon organized by flydubai.

2015 Secured 360 Rank out of 1572 teams in ACM ICPC online contest.

2014 Cleared ISI(Indian Statistical Institute).

2011 Secured state rank 12 in RMO(Regional Mathematical Olympiad).

Position of Responsibility

IIIT Hyderabad **CTF Coordinator:** Coordinator of Breakin CTF, an event of annual fest of university.

IIIT Hyderabad **CLC Coordinator:** Coordinator of cultural events of university.

IIIT Hyderabad **Web Admin:** Web administrator of university portals.

Miscellaneous

Languages Golang, C++(STL), C, Python, Java, Bash, Javascript, React

Courses Distributed Systems, Principles of Information Security, Operating Systems, Computer Networks, Compilers, Information Retrieval and Extraction, Algorithms, Statistical Methods in AI, Data Structures

Hobbies Playing pool, swimming

Miscellaneous Git, Linux, gRPC