Nilesh Rathi

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About Me

I am interested in building distributed systems and solving fundamental systems problems. My primary interests lie at the intersection of distributed systems and practical cryptography. My recent efforts have been centered around increasing scalability of blockchains without compromising on the security aspect.

Education

Indian Institute of Science, Bangalore *Since August 2018*
Masters in Technology (Research) CGPA: 9/10
Department of Computer Science and Automation.
Research Supervisors: Prof. K. Gopinath, Prof. P.V. Kumar

Bundelkhand Institute of Engineering Technology, Jhansi *August 2014 - July 2018*
Bachelors of Technology Percentage: 71.74%
Department of Computer Science and Engineering.

Experience

- **Internship at Tata Consultancy Services** *April 2017 - June 2017*
  Developed a platform for job-seekers to connect with companies looking to hire.

Projects

- **Sharding Blockchains without compromising security guarantees** *August 19 - Present*
  The aim if to scale blockchains transaction rate using sharding without compromising security guarantees– in particular making it secure against dynamic adversary.
- **Dynamic Pinning In Data-Centers connected over IPFS** *March 19 - May 19*
  Implemented dynamic content pinning in IPFS Cluster, based on the number of request for an object and position of node that made the request. Under a high request setting, the modification leads to high speedups in latency and throughput.
- **PintOS development** *January 2019 - April 2019*
  Developed support for userspace program execution, virtual memory management and filesystem with swap memory.
- **TlbXorCache: Quantifying the relationship of hit and miss rates of TLBs and Data Caches** *Sept 18 - Dec 18*
  Quantifying the relationship between TLB and DCache. Profiling various workloads like spec, Redis, GAP, etc. using *AMD IBS Toolkit* with focus on *Dead Blocks* i.e Cache blocks whose translations are absent in TLB.
- **Implementing a suggestive dictionary with spelling check and automatic completion** *January 2014 - April 2014*
  Developed a dictionary in order to learn and experiment with the Trie Data-Structure and its properties.

Assignments

- Performed sentiment analysis on twitter stream using Apache Spark Stream
- Cache optimized Matrix multiplication. Obtained speedup of 15x from that of naive.

Courses at IISc

Data Analytics, Scalable Systems for Data Science
Computer Architecture, Operating Systems, Theory and Practice of Computer Systems and Security
Design and Analysis of Algorithms, Blockchain and it's Applications(*Audit*)

Awards And Achievements

- Secured 99.65^{th} percentile in *GATE-2018* (over 100k participants).
- Topper (Top 1%) of course Introduction to Modern Application Development
- Won several prizes in inter-college web-designing, programming and debugging contests, hosted by the university.

Skill Set

Programming Languages	C, C++, Java, Python, Go
Framework	Apache Spark, Giraph, Spark Stream
Interests	Blockchain Systems and development, Technical Reading