Rajath Shashidhara

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Education

The University of Texas at Austin Aug 2019 - Present
M.S. in Computer Science GPA: -/4.0
Courses: Advanced Operating Systems, Datacenters, Virtualization

Birla Institute of Technology & Science (BITS), Pilani, India Aug 2012 – June 2017
M.Sc. (Hons.) in Physics GPA: 9.01/10
B.E. (Hons.) in Computer Science Distinction Class
Courses: Parallel Computing, Operating Systems, Computer Networks, Data Mining, Information Retrieval
Adjudged **Best Student of Batch 2017** by Department of Physics for outstanding academic and research track record

Experience

Samsung Research, Bangalore, India July 2017 – Aug 2019
Senior Software Engineer (Research), Communication R&D Division

- Developed the fast data-plane radio access network stack (PDCP, RLC, MAC) for the world's first Pre-5G mobile user equipment. Technical support for the 5G demo at *PyeongChang Winter Olympics* (Korea, 2018)
- Research on *parallelization, memory management & flow control* to improve throughput and reduce memory footprint of datapath of 5G NR Distributed Unit (commercialized in USA & Korea)
- Developed *Reinforcement Learning based Radio-Resource Scheduling* – multi-objective optimization in stochastic input-driven environments using Deep Q-Networks (DQN) & adapted policy iteration
- Presented with *Samsung Technical Excellence Award* for no critical S/W bugs in bare-metal real-time code

Symantec, Bangalore, India Jan 2017 – June 2017
Software Engineering Intern, Website Security Development Team

- Designed a proof-of-concept microservices based cloud-ready web application to automate the purchase, delivery & installation of SSL certificates for webservices hosted on Amazon AWS

Microsoft, Hyderabad, India May 2016 – July 2016
Software Engineering Intern

- Integrated Azure AD cloud authentication/authorization service into ASP.NET Core based web applications

Google Summer of Code June 2013 – Sept 2013
Open-source Software Development Intern, Apache Software Foundation (OpenOffice)

- Developed an in-app document version management toolbar which connects to cloud content repository

Projects

Distributed Combinatorial Optimization on a Cluster Mar 2016 – May 2016
Advisor: Prof. Sundar Balasubramaniam [Code] [Design]

- Designed a distributed algorithm to efficiently perform *Branch & Bound search* on a commodity cluster
- Developed a load balancing technique based on *peer-to-peer diffusion* between nodes on toroid communication topology and *leftist-heap based work-stealing queues* between threads

Persistent storage with C++ STL abstraction Oct 2015 – Mar 2016

- Implemented *templatized out-of-core (secondary storage) data structures* (B+ Trees, Vectors) with STL interface. User-space applications simply need to relink with library for persistent structures [Code]
- Customized *buffer caches* bypassing the kernel, *async I/O* for high efficiency
- Built a proof-of-concept TF-IDF based Search Engine using this library that scales beyond primary memory limits (> 100GB) [Code]

IoT enabled Laboratory Environment: Project SmartLAB Aug 2012 – Dec 2013

- Proactive lab monitoring and activity tracking using *sensor networks, speech and gesture recognition* [Code]
- Awarded *Prof. I J Nagrath Student Project Fund* by Dept. of Electrical Engineering, BITS Pilani [Link]

Skills

- **Languages:** C, C++, Java, Python (+numpy/scipy/matplotlib/PyTorch), Julia, LaTeX, JavaScript
- **Frameworks:** Linux, MPI, OpenMP, Pthreads, ODP, DPDK, ns-3, NodeJS, AWS, Azure
- **Tools:** git, gdb, make, valgrind, strace, qemu, kvm