

# Santanu Sen

Bangalore, India

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## Summary

Seasoned Software Development Engineer with rich experience in design and development of scalable distributed software systems and frameworks. Currently working as a developer in a Software Defined Data Management Project leveraging Linux, cloud ecosystem features and containerization.

Proficient in C, C++, Object Oriented Design, Design Patterns, Distributed Transactional Systems, Data Structures, Algorithms, Application Development in Linux/Unix Environment, Multi-threading, IPC, Docker, and Kubernetes Based Software Solutions.

## Work Experience

### NetApp India Pvt. Ltd.

A Fortune 500 Hybrid Cloud Data Management Solutions Company

Dec. 2018 - Present

#### MEMBER TECHNICAL STAFF

Bangalore, India

- Working on an Auto-Scaling solution to achieve reduction in cloud resource usage costs of NetApp's containerized Software Defined Data Management solution on Kubernetes orchestrated platforms.
- Quickly picked up the Golang basics to write a Kubernetes Vertical Pod Autoscaler (VPA) simulator. The simulator enabled simulation of several months of resource usage within seconds and helped fine tune the auto-scaling solution.
- Designed and implemented the liveness and readiness features for Data Management pods which helped in detection of multiple issues early in the development cycle.
- Optimized the RESTful API handler implementation for cluster-level space attributes retrieval to reduce API response timings from more than 5 seconds to less than a second.
- Designed and implemented a scheme for protection of system-critical memory pages from accidental writes in the Data Management binary.
- Designed and developed the startup and software upgrade features for the Data Management containers.

### Infinera India Pvt. Ltd.

A Global Supplier of Innovative Networking Solutions; A Pioneer in Large-Scale Photonic Integrated Circuits Design

Jul. 2012 - Nov. 2018

#### STAFF SOFTWARE DEVELOPMENT ENGINEER

Bangalore, India

- Enhanced the Network Element Transaction Framework through private workspace for write transactions which achieved a superior scaling to support 15 simultaneous NMS connections compared to only 3 NMS connections by a 64 chassis Network Element cluster.
- Created a Network Element Link Traversal Framework to simplify the fault correlation logic. The framework was later reused by multiple features which saw a reduction in the number of traversal related bugs from 2 per feature on average to 0.
- Designed and developed a declarative Fault Correlation and Management Framework for the Software Defined Networking suite which accomplished specification of new alarm definitions and fault correlation rules through external files without recompilation.
- Designed and developed a C++ Cryptographic Wrapper Library to simplify digital signature verification and decryption of Instant Bandwidth licenses. The library was later reused to implement several other security features.
- Contributed to engineering efforts from object modelling, to implementation and delivery of a number of Network Element Management Plane Software modules such as Optical Amplifiers, Broadcasting Modules, Multiplexers, Cross-Connects and Protection Switching modules across several releases.

### Tejas Networks Ltd.

A TL 9000 Certified Optical Networking Products Company

Jun. 2006 - Jun. 2012

#### LEAD ENGINEER, R&D

Bangalore, India

- Enhanced the Network Element Software transaction performance by backgrounding and batching of configuration database commits which reduced centralized NMS based circuit restoration timings from 40 seconds to sub-second.
- Designed and implemented different Automatically Switched Optical Network service classes using Generalized Multi-Protocol Label Switching. Created a User Mode Linux based simulation framework which effected a drastic reduction in unit-testing time.
- Designed and developed a System Startup and Failover Manager supporting a state machine based phased initialization of Network Element Software.
- Improved management layer security of Network Elements through implementing HTTPS support for the web server, user session management, and audit logging of configuration changes.
- Simplified user-management across multiple Network Elements by implementing support for a centralized RADIUS based authentication. The feature relieved the operators from adding and managing users separately in each individual Network Element.

## Honors & Awards

### Peer Recognition Award, NETAPP, BANGALORE, INDIA

May. 2020

Recognized for teamwork during the "Quark Version Upgrade" project by the Cloud Engineering Team Peers.

### Productization of Hackathon Idea, NETAPP, BANGALORE, INDIA

Feb. 2020

Demonstrated the idea of "Vertical Pod Autoscaling for DMAP Containers" at NetApp Hackathon which was shortlisted by the panelists of Technical Directors for productization.

<b>Spot Bonus Reward</b> , INFINERA, BANGALORE, INDIA	Mar. 2017
Rewarded for significant contribution to design and development of management plane software of Flexible Broadcast Modules.	
<b>Hackathon Star Project Award</b> , INFINERA, BANGALORE, INDIA	Jun. 2015
Awarded for the project titled "Parametric Software" presented at Infinera Hackathon.	
<b>Spot Bonus Reward</b> , INFINERA, BANGALORE, INDIA	Jun. 2015
Rewarded for exceptional performance in design and development of Fault Integration and Alarm Correlation for the Gen-3 Line Systems.	
<b>Achievement Award</b> , TEJAS NETWORKS, BANGALORE, INDIA	Apr. 2011
Awarded for optimizations in management plane software to reduce ASON circuit restoration time and development of the session management feature.	
<b>Obtained a 92.33 Percentile Score in Graduate Aptitude Test in Engineering</b> , MHRD, INDIA	Mar. 2004

## Patents and Publications

### PATENTS

Systems and Methods for Decoupled Optical Network Link Traversal	Jun. 2020
USPTO, APP. NO. 16/136,810, DOC. ID: US 20200100003 A1	

### PUBLICATIONS

A Neuro-Fuzzy Scheme for Integrated Input Fuzzy Set Selection and Optimal Fuzzy Rule Generation for Classification	Dec. 2007
INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION AND MACHINE INTELLIGENCE, PP 287-294, LNCS, VOL. 4815, SPRINGER	

## Education

### National Institute of Technology, Durgapur

MASTER OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING	2006
West Bengal, India	
<ul style="list-style-type: none"> <li>CGPA: 9.58/10</li> <li>Thesis Title: Integrated Feature Analysis, Input Fuzzy Set Selection and Fuzzy Rule-Based System Identification in a Neuro-Fuzzy Paradigm</li> </ul>	

### The University of Burdwan

BACHELOR OF ENGINEERING IN COMPUTER SCIENCE AND ENGINEERING	2004
West Bengal, India	
<ul style="list-style-type: none"> <li>TCPA: 79.5%</li> </ul>	

### Burnpur Boys' High School

HIGHER SECONDARY, WEST BENGAL COUNCIL OF HIGHER SECONDARY EDUCATION	2000
West Bengal, India	
<ul style="list-style-type: none"> <li>Science Major, 79.4%</li> </ul>	

### Asansol Ramakrishna Mission High School

SECONDARY, WEST BENGAL BOARD OF SECONDARY EDUCATION	1998
West Bengal, India	
<ul style="list-style-type: none"> <li>82%</li> </ul>	

## Extracurricular

### CryptCpp, A C++ Cryptographic Interface Library

HTTPS://GITHUB.COM/SANTANUSEN/CRYPTCPP	2020 - Present
GitHub	
<ul style="list-style-type: none"> <li>Wrote this C++ library to decouple application code from cryptographic libraries.</li> </ul>	

### Participant in Mukti, A National Level Technical Symposium on Linux and FOSS

LINUX USERS' GROUP, NIT, DURGAPUR	Jan. 2006
India	
<ul style="list-style-type: none"> <li>Received First Prize in C Programming contest.</li> <li>Received Third Prize in System Administration contest.</li> </ul>	

### IBM Certifications

PROFESSIONAL CERTIFICATION PROGRAM FROM IBM	Apr. 2005
India	
<ul style="list-style-type: none"> <li>IBM Certified Associate Developer in IBM WebSphere Studio V5.0</li> <li>IBM Certified Database Associate in IBM DB2 Universal Database V8.1</li> </ul>	