

SHRUTHI RACHA

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EDUCATION

University of Wisconsin – Madison Master of Science in Computer Science <i>Courses:</i> Advanced Operating Systems, Big Data Systems, Distributed Systems, Machine Learning, Advanced Topics in Data Science, Introduction to Computer Networks, Virtual Reality, Master’s Research.	Wisconsin, USA	Aug 2015 - Dec 2017 CGPA: 3.81 / 4.0
R. V. College of Engineering Bachelor of Engineering in Computer Science and Engineering	Bangalore, India	Aug 2009 - May 2013 CGPA: 9.54 / 10

PROFESSIONAL EXPERIENCE

NUTANIX	San Jose, CA	May 2016 - Present
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Member Technical Staff - 4 , Acropolis		May 2019 - Present
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Member Technical Staff - 4 , Flow		May 2018 - April 2019
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- **Lead for Security Planning - Flow and Epoch integration** - Network flow visualization across individual/grouped VMs.
- This is version 1 of the complex integration of the two engineering stacks of Flow and Epoch products.
- Conceptualized the feature’s user stories and life cycle by collaborating with multiple teams - PMs, UX, Visual Design, UI, Flow, Infrastructure (life cycle and packaging) and Acropolis (hypervisor).
- Architected, designed, single handedly implemented the entire feature end to end including life cycle management of the product and fixed bugs during QA (functional and system test) to take the product to the release stage.
- Worked on, not just the functionality but also catered to scale and performance metrics essential for enterprise quality.
- Impact: High customer impact due to many Flow customers waiting on this, essential business need to address product gap.

Member Technical Staff - 3, Xi (Hybrid Cloud) networking Team		Oct 2018 - May 2018
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- **Lead for SNAT in Xi** - Proposed a new way for providing SNAT functionality for Xi Hybrid Cloud - enables external network connectivity for the tenant VMs in Xi. Worked on prototyping, designing and implementing SNAT.
- Design comprised of a complex object model involving dataplane changes across Nutanix Prism Central, Prism Element, Xi SDN Controller, Neutron, OVS, OVN and Acropolis Hypervisor at the PC and PE level.
- Implemented the control plane - event watchers, pollers, fault handlers, cluster upgrades, node down/up, HA, etc.
- Modified OVN source code and integrated with OVS, OVN and neutron architectures.
- Integrated with the existing networking stack to provide multitenant SNAT capability.
- Integrated this Xi-SNAT feature with existing Xi-Hybrid Cloud Floating IP.
- Ensured this passed the Quality Assurance Pipeline - which involved knowledge transfer sessions and co-ordination with globally distributed QA (functional, automation, system and contractor teams) to formulate, review and execute test plan accompanied with long hours of complex networking data path debugging sessions.
- Impact: Releases - Xi-Alpha, Xi-GA, Design compatible with short term as well as long term Xi architecture. The conceived solution is being up streamed to be included in the main OVN.

Member Technical Staff - 3, Xi (Hybrid Cloud) networking Team		Feb 2017 - Oct 2018
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- **Redesigned On-Prem Virtual Network and Subnet APIs and implemented them for Xi - Nutanix's Hybrid Cloud Offering.**
- Ensured APIs worked with new intent engine in Xi SDN Controller.
- Implemented integration of Xi-networking APIs with Xi Portal in AWS, Xi AZ, Xi SDN Controller, Nutanix Prsim Central and Prism Element. (remote connection RPCs, fanout proxy RPCs, timeouts, authentication)
- Designed and implemented version 1 of functional tests for network entities’ CRUD API operations for Xi Networking.
- Extensive cross team collaboration to achieve Xi-portal launch and end-to-end Xi networking workflows.
- Impact: Releases - Xi-Alpha, Xi-GA. Enabled co-existence of On-Prem and Xi by ensuring common customer facing networking APIs but with different backend workflows.

Member Technical Staff - Intern, Acropolis Hypervisor		May 2016 – Aug 2016
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- Designed and implemented a prototype using docker container technology and libguestfs tools. Patent application in progress.

Nutanix Hackathons

Hackathon 6.0		Sep 2018
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Our team “NanoFlow” won in the category - “Nutanix Flow” - Flow for hybrid platform of VMs and Kubernetes Containers.

Contribution - prototyped microsegmentation in Kubernetes pods, conceptualized workflows, coordinated with UI + UX.

Hackathon 5.0		Sep 2017
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Our team “Eye in the Sky” won in the category - “making the core strong for \$5B” - Cybersecurity for Hybrid Cloud using Blockchain. **Contribution - implemented APIs to translate hybrid cloud object (files/applications) access operations to blockchain transactions and the blockchain transactions in Ethereum.**

Nutanix's annual conference .Next

- **Anaheim, USA** May 2019
 - **Lead for Security Planning (Flow+Epoch) Feature's demo**, part of CTO's keynote demo.
- **London, UK** Nov 2018
 - **Lead for the CTO's FLOW keynote demo** - Use cases demonstrated required bringing together the capabilities of three different products in Nutanix: Flow, Calm and Epoch.
 - Formed and Co-ordinated a globally distributed team comprising of UI, Engineering (Flow, Calm and Epoch), IT for infrastructure and demo logistics.

Implemented the Flow + Epoch backend for the demo workflows.
- **New Orleans, USA** May 2018
 - **Speaker at the NX files customer and partner session** - presented an in-house prototyped project centered around Hybrid Cybersecurity and Blockchain.
- **Nice, Europe** Nov 2017
 - Lead for CTO's demo for Flow/microsegmentation.
- **Washington DC, USA** June 2017
 - **Designed and implemented a new DB hacking application** to demonstrate the working of microsegmentation in the Flow keynote demo. This application has been used in multiple .Nexts, SKOs, keynote demos and in various other product demo sessions like sales, marketing etc.
 - Worked on composing workflows and implementing parts of the backend **for Xi-portal networking APIs for the Xi keynote demo**.

VMWARE

Bangalore, India

Aug 2013 – Aug 2015

Member Technical Staff, ESX Storage (MTS-1 promoted to MTS-2 at 18 months)

- **Designed and incorporated** architectural changes in disk and object libraries across versions of **ESX, virtual SAN (vSAN), virtual volumes (vVols)** and **Virtual Machine File System (VMFS)**.
- **Implemented delta disk checker** to scan, detect and report data corruption of a **virtual machine's snapshots**, delta disks and their metadata. This reduced time taken for root causing from weeks to a couple of days for 70% of backup and snapshot issues.
- As the **Scrum Master and Triage Lead**, tracked team activity and triaged feature requests and complex storage stack issues reported by customers and partners.
- **Member of Core committee, VMWare Foundation:** led/volunteered multiple community service projects (Step-Up for India, Agastya Foundation, Akshaya Patra Foundation, etc).

ITTIAM SYSTEMS

Bangalore, India

Jan 2013 – May 2013

Software Dev Intern, Media Labs

- **Designed and implemented the Customer Subscription and Billing Module** in version 1 of the product "[farmOTT](#)", a Cloud Based Video Transcode Service using PHP, REST APIs, FFmpeg, AWS EC2 and High Efficiency Video Coding(HEVC). "[farmOTT](#)" enabled content owners and media enterprises to manage their video online.

RESEARCH EXPERIENCE

Graduate Research Assistant

University of Wisconsin - Madison

Aug 2015 – May 2016

- Advisor: Professor Barton P. Miller in the Department of Computer Sciences.
- **Designed Eclipse/IntelliJ plugins** to support [SWAMP](#) functionalities that facilitated security testing of various development environments. **Automated the infrastructure** (virtual machine creations, OS image customization and packaging of tools)

Research Assistant

Indian Institute of Science - Bangalore

Jun 2012 – Aug 2012

- Advisor: Dr. A. G. Ramakrishnan in the Medical Intelligence and Language Engineering Lab.
- **Designed front end, implemented basic text rendering engine for Indic scripts on Android.** This Indic keyboard provides on-screen keyboards for Devanagari, Kannada, Tamil, Telugu and Malayalam scripts. [Mile Indic Keyboards](#). [Source Code](#).

SKILLS

- *Languages:* Python, C, C++, Java, SQL, HTML, CSS, PERL, PHP, R, REST APIs.
- *Tools/Frameworks:* GDB, GIT, Perforce, SVN, RPMBuild, OZ, libguestfs, AWS, Latex, GRPC, Apache Thrift, MySQL, Blockchain.
- *OS/Cloud Platforms:* AWS, Google Cloud Platform, Microsoft Azure, Openstack, Unix, Linux, Mac OS, Android, Window.

SELECT PUBLICATIONS

- [Granular Computing and Network Intensive Applications: Friends or Foes?](#) (contribution mentioned in acknowledgement section) Hotnets 2017
- [Jua: Customer Facing System to Improve User Experience in Public Clouds](#) Semantic Scholar, Summer 2016.
- [Performance Analysis during Live Migration](#) International Journal of Engineering Research Technology (IJERT), 22nd April, 2013.
- [Performance Analysis of Goldwasser-Micali Cryptosystem](#) International Journal of Advanced Research in Computer and Communication Engineering (IJARCCE), July 2013.

SELECT PROJECTS

Systems Projects

- Evaluating **Viability of Network Functions on Lambda Architecture**: Implemented network functions on Lambda Architectures (AWS, Google Cloud and Azure) and proposed a locality-aware, event-based NF chaining system.
- **NFS-Like Distributed File System**: FUSE on the client side, Thrift for communication, hosted on Google Cloud.
- Benchmarking and comparison of various RPC communication mechanisms: Custom UDP based protocol GRPC, Apache thrift.

Big Data Systems Projects

- Various small course projects on Apache Hadoop, Spark, Storm, Hive, TensorFlow etc using Azure, AW, Google Cloud Platforms

Machine Learning Projects

- Designed a system to predict the outcome of a cricket match by learning features sets from statistics in CricInfo.com. Implemented Iterative Dichotomizer-3 Tree, Single-layer neural network and Tree Augmented Naïve Bayes algorithms for predicting diabetes, heart disease, tic-tac-toe moves and RADAR signals.

Miscellaneous Projects

- **MATRIX**: Matching, Analysis, Text Retrieval and Information Extraction on data sets from Yelp and Zomato.
- **Cloud-O-Media**: Designed an application to share multimedia files over the cloud. Catered to live streaming requests by splicing video segments and storing it for subsequent forwarding. Java RMI, Amazon SDK, Microsoft DivX.
- **Online Test System**: Implemented an end-to-end framework with a web interface and database to conduct examinations online and retrieve details about end-users comprising of students and faculty. C#, ASP.NET, MySQL.
- **Load Balancing during Live Migration**: Implemented scripts to live migrate(pre-copy and post-copy) virtual machines across hosts by analyzing performance of workloads. iSCSI protocol, Xen hypervisor and Perl.