

# NITIN SHIVARAMAN

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## **Professional Summary:**

- Joint-PhD from TUM-NTU with 9+ years of professional experience in embedded software and firmware development.
- Lead-PI for a Collaboration project grant awarded with S\$250,000.
- Research interests in the domains of IoT, blockchain, distributed and resilient systems.
- Strong programming experience in C and Python languages.

## **Industrial and Research Experience**

**TUMCREATE Ltd      Research Fellow/Associate      (Sep 2021-Present)/(Feb 2018-Aug 2021)**

- Research on power-efficient communication algorithms for IoT.
- Research on resilient operation for IoT systems in presence of faults and attacks.
- Research on cost and power-efficient synchronization using Blockchain.
- Research on timing models in IoT-Cloud continuum.
- Research on load balancing modelling and algorithm for Mobile devices.

**Hewlett-Packard Singapore Pte Ltd      Senior Firmware Engineer      (Aug 2016 to Jan 2018)**

- Development and enhancements of FAX features for Enterprise and business printers.
- Implementation of adaptation of a new modem to the existing FAX architecture.
- Debugging and Resolution of issues reported from testing and customers.
- Development of features in SCAN for HP printers of 2019 lineup.

**Nanyang Technological University      Research Associate      (Jan 2015 to Aug 2016)**

- Implemented a custom predictable DDR memory controller using state machine.
- Developed embedded software applications on ARM Cortex-A9 using DS-5 in Baremetal and FreeRTOS.
- Involved in project for developing Cell Balancing strategies for Electric Vehicles in Automotives with use of CAN protocol for communication.
- Project on face recognition and low cost security system using Raspberry pi to guide a master thesis.

**SMART(Singapore-MIT Alliance)      Innovation Fellow      (Oct 2015 to Jan 2016)**

- Worked on a visualization engine project for managing the business aspects.
- Trained in product development, project management, resource planning and marketing of the product.
- Trained by professors from MIT, INSEAD and founders/entrepreneurs of different companies.

**Finisar Singapore Pte Ltd      Embedded System Engineer      (Oct 2013 to Jan 2015)**

- Implemented firmware an extended range product for parallel optics with I2C driver development.
- Development of a low cost product by redesign of the existing firmware in assembly language.
- Worked on a project for dynamic change of resistance to counter for temperature compensation in assembly language.
- Development on LLVM for new backend compiler.
- Use of unit testing for firmware regression and further enhancement for creating smoke tests.
- Technical documentation on modules and interfaces and scripts for internal team development.

**Nokia Siemens Networks      R&D Engineer      (Jul 2011 to Jul 2012)**

- UMTS Protocol Stack Development (MAC and FP protocols)
- Implemented frame counters for resolving bugs causing frame loses.
- Feature development and module testing for HSPA (3GPP Rel 9).
- Completed a department level C/C++ certification (RNC C/C++ programmer).

- Developed a framework for RNC system to migrate from DSP to multicore architecture.
- Resolved issues coming out of functional testing and customer issues.

**Nanyang Technological University**                      **Project Officer**                      (Aug 2013 to Sep 2013)  
**Master's Thesis**    **Brute Force Analysis**                      (2013)

- Involving experimentation of different data set constraints imposed on a design to check performance, area and power.
- The design space is expanded so as to introduce machine learning and hence deduce the optimum design constraints for the design on Xilinx, Altera and Microsemi Platforms.

**Bangalore Institute of Technology**                      **Student**    (Jan 2011 to Jun 2011)  
**Bachelor Project**    **Image Search and Retrieval**                      (2011)

**Indian Institute of Science (IISc)**                      **Internship**    (Jul 2010 to Aug 2010)

- Detection of Cancer tumor cells using Ultrawide band Microwave Imaging with Radars.
- Internship was done under the supervision of Assoc Prof. K.J.Vinoy.

### Academic Information

**Master of Science**    **Embedded Systems**    (Aug 2012 to Aug 2013)

Nanyang Technological University  
**CGPA-4.29/5**

**Bachelor of Engineering**    **Electronics and**    (Sep 2007 to Jun 2011)  
Bangalore Institute of Technology                      **Communication**

**Aggregate-78.75/100**

### Grants

- Awarded with Intra-Create Seed Grant on “**Improving fault-resilience of Singapore’s IoT infrastructure through smart sensing and distributed consensus**” with S\$250,000 for 18 months.

### Project Management and Supervision

- Supervised 3 Bachelors Thesis, 2 Master Thesis and Lead-PI for the Grant Project

### Publications

- A Survey on Time-Sensitive Resource Allocation in the Cloud Continuum, **Information Technology Journal**, 2020.
- A novel load distribution strategy for aggregators using IoT-enabled mobile devices, **SmartGridComm2021**.
- Cluster-based network time synchronization for resilience with energy efficiency, **RTSS 2021**.
- Blockchain, what time is it? Trustless Datetime Synchronization for IoT, **COINS 2020**
- DeCoRIC: Decentralized Connected Resilient IoT Clustering, **ICCCN 2020**.
- Real-Time Energy Monitoring in IoT-enabled Mobile Devices, **DATE 2020**.
- Efficient Decentralized Active Balancing Strategy for Smart Battery Cells, **DATE 2017**.
- Demo abstract: Predictable SoC architecture based on COTS multi-core, **RTAS 2016**.

### References

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