Aditya Upadhyay

Staff Engineer @ Samsung Electronics

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Education

2015–2017 **M.Tech in Computer Science**, *Indian Institute of Technology(Indian School of Mines)*, Dhanbad, India, *Grade: 6.8*
Courses: Advanced Wireless Networks, Cryptography and Internet Security, Pattern Recognition and Image Processing, Advanced Operating System

2011–2014 **B.E in Computer Science**, *Bhilai Institute of Technology*, Chhattishgarh, India, *Percentage: 76.92*

2008–2011 **Diploma in Computer Science**, *Govt. Polytechnic* , *Percentage: 76.52*

Relevant Skills

Languages	C, C++, Python, Shell Scripting, Rust
Technologies	WDF/WDM Framework, NVMe over PCIe solution (Storport Miniport Driver), protocol based differnet storage solutions, RTOS, Static and Dynamic Analysis of Binary linux binaries, kernel mode services for Windows/Linux.
Tools	DebugDiag, Debugging over Qemu, Windbg, gdb, PCIe Analyzer, Samsung MSVP Tools to validate storport miniport driver using python script and c++ written dlls.
Architectures	x86-64, SPARC, ARM
Open Source contribution	Newlib-Cygwin (RTEMS Source Builder)

Experience, Internship and Projects

AUG. 2022 - Present **Staff Engineer - Memory solutions**, *Samsung Electronics*, Bangalore

- Involved in the development and feature enhancement of NVMe Windows storport miniport driver over PCIe transport protocol as well as responsible for writing python script to validate NVMe based SSDs functionalities validation. Completely designed and developed one IRP Recorder tool to record and replay IRP received by device in later point of time in case of failure or doing memory leak analysis as a part of upper filter driver.
- Domain: WDM based device driver, MSVP Framework

Mar. 2020 - Aug. 2022 **Software System Designer 2**, *AMD India Pvt. Ltd.*, Bangalore

- I was responsible for working on AMD Sensor Fusion Hub Driver for Windows running systems integrated with different general purpose sensors like accel, gyro, magnetometer, proximity sensors and their applications . The current integration is related to proximity sensors that is used to detect human presence with wait and lock feature. Completed project: Graphics Diagnostic factory tool. I designed entire architecture for this project and responsible for providing end to end customer support.
- Domain: KMDF and UMDF driver frameworks (WDF/WDM based device driver) for sensor fusion hub.

Feb. 2019 – Nov. 2019 **Software Engineer**, *EdgeVerve-Infosys*, Bangalore

- As a part of EdgeVerve, I worked on Loadbalancer in Finacle Banking Software. This loadbalancer exists between Web Services and Business Logic Layer. In terms of Performance Measurement, I was also taking care of requests in Business Parallelization and Non-Business Parallelization manner. Mostly involved with binary optimization

Jan. 2018 – Nov. 2018 **Application Developer**, *Oracle India Pvt. Ltd*, Bangalore

- As Application Developer in Supply Chain Management, I was working on Sales Order Entry and added the support of Adjustment Schedules that help the customers to get prices based on their regions.

May. 2017 – Aug. 2017 **Student Software Developer**, *Google Summer of Code-2017*, Internship

- RTEMS is an open-source RTOS. POSIX Compliance allows developers the maximum flexibility in creating application software that can be port on to the other execution environments. In the first phase of my project, I have added support of all long double complex methods to newlib and tested these methods on RTEMS SPARC and ARM BSPs. For this, I have used erc32 and Xilinx zynq a9 qemu simulator respectively.

- I added the support of inttypes methods to newlib as well as made these methods to reentrant to get the status and its thread locale local information. I have made test suites for these methods and run them on SPARC and ARM BSPs. All the required coding practices are upstreamed to mail-line.

- Contribution: https://github.com/mirror/newlib-cygwin/commits?author=aadit0402

Nov. 2016 – May 2017 **Major Master's Thesis Project**, *DRDO*, IIT Dhanbad

Machine Learning based optimization in Wireless Sensor Networks for Intruder Detection System

- Further I created and simulated an energy-efficient dynamic routing algorithm for WSN's. It senses traffic ahead in its path and re-routes the messages dynamically, based on A* heuristic search algorithm.
- It was analysed against competing algorithms using best-case scenarios based on static search results using Floyd-Warshall and shown to perform better on both static and random deployment of sensor nodes.

Jun. 2016 – Nov. 2016 **Minor Master's Thesis Project**, *DRDO*, IIT Dhanbad

Machine Learning applications in Wireless Sensor Networks for Intruder Detection System

- I developed a simulation model for a WSN used for intruder detection. I simulated and analysed state-of-art by applying Swarm Intelligence method like particle swarm optimization for cluster head selection and energy optimization, consisting of Telos-B family of sensor nodes on two cases.
- First one is on static deployment on nodes and the second one is random deployment on sensor nodes. We created a test-bed using TOSSIM (TinyOS Simulator) to describe topologies and setup routing tables on each TinyOS simulator instance.

Activities

Google Summer of Code Mentor from 2018 to 2020 (part-time)

As a Mentor, I had been reviewing the proposal of students and also taking the responsibility of code review before merging the code to main stream either in RTEMS or Newlib-Cygwin for 2 years.