

# SUPRAGYA RAJ

<https://www.linkedin.com/in/supragyaraj>  
<http://github.com/supragya>

Email: [supragyaraj@gmail.com](mailto:supragyaraj@gmail.com)  
+91 97907 22967

## EXPERIENCE

### Browserstack Mumbai, MH, India

Software Engineer (Desktop Platform team)

Dec 2019 - Present

- Actively Developing for and managing (Dev + Ops) a highly heterogeneous cloud infrastructure with over 7000 active terminals consisting of machines running all macintosh and windows platforms.
- Current cloud infrastructure consists of **disparate components** such as AWS, Windows KMS, VMware ESXi, reverse proxies, jump hosts, smokeping, DHCP etc.
- Hera SPOC framework**: Architected and developed a single point of contact framework + tool for internal engineering teams to access, debug, automate and run diagnostics parallelly on terminals.
- Hera allows status checks, configuration and actions to be taken from a **single control panel**.
- Parallel diagnostics** allows diagnostics tools to be provided as an endpoint to different teams. Also, proves vital for actively monitoring production health and uptime.

### Cisco Systems Bangalore, KA, India

Software Engineer (Enterprise wireless controller team)

July 2019 - Dec 2019

Software Engineering Intern (Enterprise wireless controller team)

Jan 2019 - June 2019

- Fast wireless swarm upgrades**: Designed and implemented heirarchical (pre)download mechanism allowing enterprise grade access points to download device images in a peer to peer fashion which earlier used to be central download based architecture.
- The Fast wireless swarm upgrade mechanism reduced bandwidth load on Cisco wireless controllers and sped up download times from **O(n)** time to **O(logn)**, becoming highly effective in enterprise deployments as well as deployments with a remotely connected controller.
- The Fast wireless swarm upgrades system allowed a speed up of about **6 times**, reducing average swarm upgrade times from 90 minutes to 15-20 minutes per image upgrade.
- Implementing controller side support for **802.11r (wireless fast transition)**, allowing fast roaming between Cisco enterprise grade WiFi access points, lowering roam times by around **10 times**.
- Configuration translator**: Developed mapping layer code to translate **openconfig** standard based wireless management to commands usable by Cisco devices.

## PROJECTS AND OPEN SOURCE CONTRIBUTIONS

### HLang Shell Language and Interpreter

- Developed a scripting language and its interpreter to provide a subset of functionalities provided by the Bourne Shell (bash) on an opensource **microkernel** (HelenOS) operating system.
- The system included building AST, compile time optimisations etc.

### Raw video container format Google Summer of Code 2018

- Extending an already existing video file format: Magic Lantern's MLV video container (which existed for Canon cameras) to be used by apertus open source cameras.
- This allows video recording to be done straight onto a well supported video file format: MLV instead of only earlier option: image sequences.
- Implemented, tested and benchmarked the performance of our usage of MLV file format on **RAID 0 configs**.

### libfuse-FrameServer Google Summer of Code 2018, Mentor - 2019

- A pseudo file system implementation based on libfuse to provide **RGBA video output** for applications such as VLC, Adobe Premiere Pro from a **raw stream of camera sensor output voltages**.
- The frameserver acts as a middleman which processes raw stream to RGBA values on the other end.
- The frameserver allowed one to control elements of stream processing such as **HW acceleration, denoising, demosaicing, down-scaling etc.**
- A related precursor project PiNG12RAW recieved **over 120 forks on github**.

## PUBLICATIONS

- Raj S., Chodnekar S.P., Harish T., Sriraman H. (2019) **eMDPM: Efficient Multidimensional Pattern Matching Algorithm for GPU**. In: Tiwari S., Trivedi M., Mishra K., Misra A., Kumar K. (eds) Smart Innovations in Communication and Computational Sciences. Advances in Intelligent Systems and Computing, vol 851. Springer, Singapore.

## EDUCATION

### Vellore Institute of Technology

Bachelor of Technology in Computer Science and Engineering GPA: 9.02/10.0

Chennai, India

July, 2019

### Army Public School, Shankar Vihar

Senior Secondary, (PCM + CS), 12th CBSE: **95.6% (aggregate), 98% (CS)**  
High School, 10th CBSE, **CGPA 10.0**

New Delhi, India

May 2015

May 2013

## AWARDS AND ACHIEVEMENTS

- Winner, Smart India Hackathon 2019, Goldman Sachs**: Mentored the team from IGDTUW, Delhi in GS problem set - smart transportation held at NIT, Calicut.
- IOStream OpenEnd**: A youtube based channel and open source initiative to mentor students for GSoC. The community worked on multiple projects ranging from Audio Fingerprinting to Automatic Trailer generation mechanisms.