

# SOHAM MONDAL

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## EXPERIENCE

### Senior SoC Design Verification Engineer

(Exp - 2yrs) June 2019 – Present

*Samsung Semiconductor India R&D*

*Bangalore, India*

- Team (Storage SoC DV) Responsibilities-Design and metric driven verification of SoC memory subsystem with unit firmware
- Completely owned End-to-End coverage driven verification of AMBA slaves of NOC/NIC
- Integrated Cadence UVCs and configured them as needed
- **Developed python and shell based tool in collaboration with Samsung HQ team for automated error-free verification & automatic testbench creation with all necessary DUT-VIP connections and components ready for NOC/NIC slave verification for an enterprise SSD SoC with large number of slaves. Reduced the Time-to-First-Test & Time-to-Market by almost 100% and facilitated meeting of verification goal quickly | Setup has been extensively used by Samsung DS Korea and appreciated by Memory VP Samsung | Won 3rd prize in Samsung Global One Solution Virtual Conference in work smart category for whitepaper presentation [ppt](#). [Cert](#)**
- Revamped flagship UFS SoC testbench setup, developed testplan for Unipro and took part in testbench integration
- Hands-on in understanding design specification & development of comprehensive testplan & UVM compliant UVC development
- Hands-on in development of constraint random verification environment, coverage, SV-assertions
- Hands-on in micro-architecture planning and development of state machine ASIP design, | RISC-V, pipelining, STA, graphics architecture

### Hardware Intern

(Exp - 2months) May. 2018 – July 2018

*Samsung Semiconductor India R&D*

*Bangalore, India*

- Team (DRAM h/w) - Researched to improve proprietary MBIST & MBISR architecture with new features | Developed (microarchitecture+RTL) adapter glue logic IP to facilitate forward compatibility from DDR3/DDR4 in ultrascale vcu-108 fpga for proof of concept
- Received Pre-placement offer on basis of work [Offer](#)

## TECHNICAL SKILLS & CERTIFICATES

**Languages:** Verilog, System Verilog, Chisel, Python, Shell, C, C++, Make, TCL, Java, OpenGL,  $\LaTeX$ , Html/Css/js

**Verification methodologies & Software libraries & frameworks:** UVM | Heroku, Flask, Docker, Tensorflow

**Dev Tools:** VS Code, Docker, Google colab, Vim, DVT Eclipse IDE

**Protocols:** AXI3&4, AHB, Unipro, UFS, Mphy, ToggleNAND, I2C, SPI, UART, DDR | **Concepts:** HPC, ASM/FSM, Advanced memory hierarchy | **Simulators:** cadence xcelium, mentor questasim, synopsys vcs, | **Waveform debug:** simvision, verdi **Fpga:** xilinx vivado, HLS | **Synthesis:** synopsys dc, yosys | **VCS:** git, svn | **Agile:** Atlassian jira, Xray | **Analogue design simulation:** virtuoso, tanner | **Certificates:** [Cert1](#) [Badge1](#) [Badge2](#)

## EDUCATION

### Jadavpur University

Kolkata, India

*Bachelor of Engineering in Electronics and Telecommunications; GPA : 8.13/10 | [Transcripts](#)*

*2015 – 2019*

- **Bachelor Thesis:** Comparative analysis of low power full adders – Under Dr. Chandrima Mondal | [Certificate](#)

### South Point High School

Kolkata, India

*W.B.C.H.S.E; 85% and W.B.S.E; 90.28% | [Transcripts](#)*

*2014 – 2015*

## PUBLICATIONS

**PreSyNC: Hardware realization of the Presynaptic Region of a Biologically Extensive Neuronal Circuitry | [VLSID-2021](#) | [Code](#)**

- Low area & power computationally extensive synaptic data-flow, floating point & posit based accelerator, deep pipelined, clocking 1GhZ in 45nm ASIC | **Selected among top five papers**

**SyNC: A neural net revealing impacts of synaptopathy mechanisms on glutamatergic neurons in autism | Under review, Frontiers**

## ACADEMIC PROJECTS

**Application specific coprocessor for computationally extensive synapse | *System-verilog, Verilog, Git***

- Custom ISA, multicycle, floating point, state optimized, ultra-low power and area real time synaptic coprocessor [Code](#) (ongoing)

**RaspberryPi3b+ & Fpga based brain tumor image classification setup | *Tensorflow, Python, Shell, HLS, Git***

- Inference models highly optimized by novel techniques which can translate to a Rpi3b+ or a novel CNN accelerator solution [Code](#) (ongoing)

## ACHIEVEMENTS

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- **Among top 5 papers@VLSID\_2021** | [Conference](#)
- **3rd prize in smart work category, whitepaper presentation@One Solutions Virtual Conference, Samsung R&D Global(memory)** - More than 2600 selected Samsung developers/staffs all around the world as contestants | \$500 + Samsung T7 SSD | [Cert](#)
- **Employee of the Month(Aug-2020)@SSIR,Bangalore** - Slave NOC/NIC automated error free verification of enterprise SSD in minimal time with custom designed tool. Multiple bugs filed in DUT by the setup and efforts are appreciated by DS-Korea memory VP
- **2nd prize in the event papier@(Convolution) conducted by JU sponsored by IET & IEEE Signal Processing Society** | ₹ 3000 | [Cert](#)
- **Qualifier@National Talent Search Examination,MHRD**

## UNDERGRAD PROJECTS

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**Text search engine (a prototype)** | *Java, Maven, Git* | [Git](#)  
**A comparative analysis of public key cryptography** | *Matlab* | [Git](#) | Paper presentation Jadavpur University 2nd [Prize](#)  
**Marks prediction** | *Python, Flask, Heroku* | [Git](#)  
**Dominant color for image segmentation** | *Python, Flask, Heroku* | [Git](#)  
**Image Captioning** | *Python, Flask, Heroku* | [Git](#)  
**Gui using Tkinter** | *Python* | [Git-1](#) [Git-2](#)  
**Medical imaging & digital topology** | *C++, Make* | [Git](#)  
**Arduino board projects** | *C++, Arduino, Esp8266* | [Vid-1 Cert-1](#) | [Vid-2 Cert-2](#)

## OTHER EXPERIENCE & EXTRA-CURRICULARS

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**Network Management@Nettech pvt. ltd.** (2016, India) | Trained in Network Management & Security [Cert](#)  
**Marketing Management@IIM Lucknow** (2016, Remote-India) | Marketing Management Internship Under Dr. Sameer Mathur [Project](#)  
**Student Partner@Internshala** (2016, Remote-India) | [Cert](#)  
**Equity Research@Money Roller** (2017, Remote-India) | [Research](#) about happenings in global financial area [Offer](#)  
**Marketing Analyst@Qrius** (2018, Remote-India) | [Cert](#)  
**Marketing Expansion Strategy@Mentored Research** (2017, Remote-India) | [Cert](#)  
**Network management@ONGC ltd.** (2018, India) | [Cert](#)  
**Student mentor@Jadavpur University Science Club** (2015-19, India)  
**Member@Jadavpur University IET** (2015-19, India)