

# SHIVAM MAHESH POTDAR

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shivampotdar.tech

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## EXPERIENCE

AMD (Advanced Micro Devices) India Pvt. Ltd.

**Silicon Design Engineer - 1**

May '21 - Present

Working as a CPU Architecture/Performance Modeling Engineer for primarily CPU Cores at AMD, Bengaluru. Work involving simulator infrastructure, RTL correlation, writing and debugging tests etc.

Indian Institute of Science (IISc), Bengaluru

**Research Intern, Computer Aided Design Lab**

Jun '20 - Apr '21

Guide : Prof. S K Nandy

Network-router monitoring in hardware for REDEFINE (a massively parallel and re-configurable silicon platform). Prototype on RISC-V-based PULPissimo. Involved Verilog, Vivado, Modelsim, Verilator.

Free and Open Source Silicon (FOSSi) Foundation

**Student Developer (Under Google Summer of Code (GSoc) 2020)**

May '20 - Sep '20

Mentors : Steve Hoover, Jonathan Balkind

Integration of WARP-V (highly configurable RISC-V core in TL-Verilog) with OpenPiton (Princeton's heterogeneous manycore framework). (Funded by Google)

Department of Electrical Engineering, IIT Bombay

**Summer Research Intern, Wadhvani Electronics Lab**

May '19 - Jul '19

Guide : Prof. Shabbir Merchant

Construction, verification and testing of digital circuits on Altera MAX V based PLD using VHDL.

## PROJECTS

**Security System in Verilog**

May '20 - Jun '20

[Details](#)

- Verilog module for phone keypad scanner, and controller with FSM, ROM and RAM.

**8-bit Micro-controller implementation on FPGA**

Aug '19 - Feb '20

[Details](#)

- Starting with basic building blocks of an MCU viz ALU, registers, RAM etc., add features incrementally.
- VHDL, FPGA, Computer Architecture

**Balancing Bot**

Dec '19 - Feb '20

[Details](#)

- Biped balancing bot with LQR controller, for e-Yantra Robotics Competition (IITB) 2020
- Embedded Systems, PCB Design, Control Systems

## EDUCATION

B. Tech. in Electrical and Electronics Engineering

**National Institute of Technology, Karnataka, Surathkal**

April 2021

8.66 CGPA

Class 12<sup>th</sup> (CBSE)

**Kendriya Vidyalaya, VSN, Nagpur**

May 2017

97.6%

Class 10<sup>th</sup> (CBSE)

**Kendriya Vidyalaya, 9BRD AFS, Pune**

May 2015

10 CGPA

## AREAS OF INTEREST

Computer Architecture

RISC-V

CPU Performance Modeling

CPU Design and Verification

FPGA / ASIC Design and Verification

SoC Design

RTL Design

Open-Source Toolchains

Hardware for ML Acceleration and HPC

## SKILLS & TOOLS

(System)Verilog / VHDL

Python

Bash Shell

Linux OS

C/C++

Xilinx Artix, Zynq MPSoC Platforms

Xilinx Vivado / ISE

Intel Quartus Prime

RISC Assembly

Embedded C

RPi/AVR/ESP/TI MSPs

SPICE

Tensorflow

MATLAB

Simulink

## PUBLICATIONS

- Shivam Potdar**, Steve Hoover, Jonathan Balkind (July 2020). "[Poster: Flexible Manycore CPU Design with TL-Verilog](#)". Design Automation Conference (DAC) 2020
- Potdar S.M.**, Gupta V., Umesh P., Gangadharan K.V. Conceptualization and Design of Remotely-Accessible Hardware Interface (RAHI) Laboratory. In Evolution in Computational Intelligence. Advances in Intelligent Systems and Computing, Springer [https://doi.org/10.1007/978-981-15-5788-0\\_12](https://doi.org/10.1007/978-981-15-5788-0_12)

## Remote-Triggered Hardware Learning Platform

📅 Jan '19 - Apr '19

🔗 [Details](#)

- Project for the [RT-Labs, Centre for System Design, NITK](#)
- Platform for students to learn Python coding for electronics with Raspberry Pi on actual device with visual feedback without the need of physical access to the device.
- RPi, Django2, Python

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## Thirsty Crow Robot

📅 Dec '18 - Feb '19

🔗 [Details](#)

- For e-Yantra Robotics Competition 2018, IIT Bombay
- Line following bot with path planning on hexagonal grid arena with OpenGL animations of the movement using Aruco markers
- ATMEGA2560, OpenGL, OpenCV, PCB Design, Path Planning

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## Cloud Tracking using Satellite Imagery

📅 Jan '19 - Apr '19

🔗 [Details](#)

- Mini Project with [Dr Yashwant Kashyap](#), EEE Department, NITK
- Processing of coloured and cloud optical thickness satellite imagery over a time period and predicting the movement of clouds
- MATLAB, SVM classification, Image processing

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## Remotely Monitored Weather and Intrusion Detection

📅 Jun '18 - Jul '18

🔗 [Details](#)

- Collecting data from temperature and humidity sensor and PIR sensor (intrusion), and publishing it to a website
- Arduino, ESP8266, digital sensors interfacing, basic web development, HTTP requests, serial communication, ThingSpeak API, AT commands

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## ACTIVITIES

- Teaching Assistant (TA) for 5 iterations of the global [RISC-V Microprocessor for You in Thirty Hours \(MYTH\) Workshop](#)
- [Career Guidance on ECE / EEE](#) for KLE Technological University
- Insight on [opportunities in Electrical Engineering](#), IEEE NITK, Dec '20
- Talk on [Experimenting with Open ISAs and associated projects](#), OpenPOWER Community (India), October '20
- Talk on [Open ISAs & Hardware](#), OpenPOWER Community (India), July 2020
- [Introductory Talk on Embedded Systems, IoT and Computer Architecture](#) for NITK Juniors, May '20
- Talk on [Research Internships](#) for NITK Juniors, October '19
- [Mentored 30 first year students of NITK in Embedded Systems and IoT](#), Summer of '19
- Community Member, [RISC-V International](#)
- Computer Architecture and Embedded Systems Interest Group Head, ACM NITK
- Student Coordinator, Embedded Systems and Robotics Lab at NITK ([e-Yantra Lab Setup Initiative, IIT Bombay](#))
- Executive Member, [ACM Student Chapter](#) and [Flying and Robotics Club](#)
- Product Manager, [IRIS NITK](#)

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## ACHIEVEMENTS

- 🌟 [Google Summer of Code \(GSoc\), 2020](#)  
\$3000 stipend from Google for open-source development for [FOSSi Foundation](#)
- 🌟 [A Richard Newton Young Fellow](#)  
57th Design and Automation Conference (DAC), July 2020
- 🌟 [Student Fellow](#)  
4th IEEE International Test Conference (ITC) India, July 2020
- 🏆 [Winner, Coding Hackathon 2k18](#)  
Organised by IoT Club, NMAMIT Nitte. Won a cash prize of ₹10000
- 🎓 [Nagpur District Topper, CBSE Class 12<sup>th</sup>](#)  
97.6%. Top 1.5% all over India. First Rank in KV Sangathan Jabalpur Region, ₹5000 cash prize from CBSE
- 🌟 [Represented Kendriya Vidyalaya Sangathan at JNNSMEE-2016](#)  
National Level Science Exhibition organised by NCERT at BIEC Bengaluru, Dec. 2016

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## RELEVANT COURSES

- [Computer Architecture Winter School \(CAWS\) 2020](#)
- [Pipelining RISC-V with Transaction-Level Verilog](#), Udemy
- [Developing HPC Accelerators using Xilinx FPGAs, ICS2020](#)
- [Computer Organisation and Architecture](#), NITK (CSE)
- [VLSI Design](#), NITK (ECE)
- [Digital System Design](#), NITK (EEE)
- [Microprocessors](#), NITK (EEE)
- [Embedded System Design](#), NITK (ECE)
- [Machine Learning](#), NITK (EEE)
- [Applications of Machine Learning Techniques to Medical Image Analysis](#)
- [Sensors and Actuators](#), SWAYAM (NPTEL)
- [Digital Signal Processing](#), NITK (EEE)
- [Python for Everybody](#), Coursera
- [Python Data Structures](#), Coursera
- [DrishTI Micro-controllers](#), Texas Instruments