Kalind Karia
Electrical Engineering
Indian Institute of Technology Bombay

M.Tech. (2021-24), B.E. (2013-17)
Gender : Male
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AREAS OF INTEREST

Computer Architecture and Security, Processor Design, VLSI Design, Embedded System Design

WORK EXPERIENCE

Sr. Project Technical Assistant
August 2017 - Present
e-Yantra Project | Prof. Kavi Arya, IIT Bombay

- **Designed** eYFi-Mega development board. **Manufactured and beta-tested** over **500 boards**
- **Reduced verification time** of sensors & controllers to **1/10th** by designing a portable **Automated TestBench**
- **Designed** themes based on **CPU Design, FPGA, Embedded Systems, Control Systems, Machine Learning** and **mentored** students for e-Yantra's international Robotics Competition (eYRC)
- **Designed** tools for automation of lab tasks to reduce manual times by **1/4th**
- **Designed** and **mentored** courses for **Embedded Systems** and **Software Foundation** on MOOC platform
- **Designed** and conducted sessions on **Linux, Git, Python, Embedded Systems, IoT, Image Processing** for faculties and students of engineering colleges

KEY PROJECTS

Micro-architecture analysis of SAT Workloads
January 2023 - Present
Prof. Biswabandan Panda, Prof. Supratik Chakraborty

- Generated detailed profiling of SAT solvers using **Intel VTune** to locate the source of bottlenecks in the pipeline stages of the CPU
- Analyzed the performance of **software prefetching** on the workloads with memory bottlenecks

SAT Workload Characterization
November 2022
Computer Architecture for Performance and Security Course Project | Prof. Biswabandan Panda

- Characterized the SAT workloads using **perf** tool
- Generated trace files with **Intel Pin** tool and examined the performance of state-of-the-art techniques for cache replacement policies, branch predictors, memory hierarchy, etc.

Automated TestBench for Sensors and Micro-controllers
May 2019 - July 2022
e-Yantra Project | Prof. Kavi Arya

- Designed **Universal Bus** to test **25 Sensors** and **3 Micro-controllers** with small design footprint for portability
- Provided **on-board 5.5 inch graphical Human-Machine Interface (HMI)** for better user experience
- **IoT enabled** data logging for monitoring the quality of batch under test

eYFi-Mega Development Board
March 2019 - October 2021
e-Yantra Project | Prof. Kavi Arya

- **Development board platform** for IoT, Robotics & Embedded system projects based on **ESP32 & ATmega2560**
- **Features**: **Over-the-Air (OTA) firmware update**, **On-board buck converter**, Multiple on-board radios, **On-board 700 KB** of SPI-Flash File System (SPIFFS) & **Embedded Workbench** suite for seamless development

PATENT & RESEARCH PUBLICATIONS

- K. Namoju, K. Karia, S. Chakraborty, B. Panda. "Kissat-INCSP: Introducing High Performing Software Prefetching Conscious Kissat-INC", Proceedings of SAT Competition 2023, ISSN: 1458-4786
- P. Trimukhe, S. Jena, K. Karia, K. Arya (2021). "An apparatus having at least dual-microcontrollers on a printed circuit board", Indian Patent Application No: 202121023159 (filed)
- K. Arya, S. Shandilya, P. Chheda, N. Cherupally, K. Karia, Y. Mali, U. Sharma (2018). "A System for Determining Physical Properties of a Commodity and Method Thereof", Indian Patent Application No: 201821028570
- K. Joshi, K. Karia, J. Patel and S. Desai, "Library Stock Verification System using Artificial Neural Networks", 2018 International Conference on Smart City and Emerging Technology (ICSCET), doi: 10.1109/ICSCET.2018.8537289

TECHNICAL SKILLS

Languages:	Python, Bash, VHDL, Verilog HDL, Embedded C, C, Java, Javascript, Sed, AWK
Tools & Technologies:	Linux, Git, Intel VTune, Intel Pin, SimPoint, ChampSim, Quartus, Modelsim, Eagle, Ngspice, FreeRTOS, Atmel Studio, Autodesk Fusion 360
Hardware:	Altera DE2i-150 board, De0-Nano board. Raspberry Pi, AVR family, ESP32, TivaC

POSITIONS OF RESPONSIBILITY

Teaching Assistant | *Prof. Biswabandan Panda | Course: Advanced Computer Architecture*   *Aug '23 - Nov '23*

- Assisted professor with **lecture preparation**, students with **assignment queries**, **auto-grading**, and conducted voluntary **help sessions** regarding the course
- Received the **Excellence in Teaching Assistantship** award from the Computer Science Department

Lead Developer | *Women in Science and Engineering (WiSE) | Prof. Rajesh Zele*   *Apr '23 - May '23*

- Lead a team to provide rural area girls with invaluable exposure to **STEM field** including electronics, robotics, etc.
- Designed and developed the **hardware and software** for the smooth functioning of the session