Rakesh Kanjilal

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Nationality: Indian **Address:** Kolkata, West Bengal, 743248

Research Interests

Analog/Mixed-Signal Circuit Design, Low-Power Architectures, PLLs, RFICs, Advanced CMOS Layout.

Training Experience

- **Prasar Bharati, Govt. of India** (Onsite) **10/2019**
  (Vocational Trainee)

  Obtained knowledge and practical exposure to the Broadcasting system (Technical Aspects).

- **Pie Infocomm Pvt. Ltd.** (Remote) **06/2021**
  (Industrial Trainee)

  Gained theoretical and practical knowledge about many electronic sensors and hardware. Completed two basic projects on Embedded systems and IoT.

Education

- **Master of Technology** **Class of 2025**
  National Institute of Technology Sikkim, Ravangla, South Sikkim
  VLSI and Embedded System
  First Class with Distinction | CGPA: 8/10

- **Bachelor of Technology** **Class of 2023**
  Mizoram University, Aizawl, Mizoram
  Department of Electronics and Communication Engineering
  First Class | CGPA: 7.51/10

- **Diploma in Engineering** **Class of 2020**
  Falakata Polytechnic Institute, Alipurduar, West Bengal
  Department of Electronics and Tele-Communication Engineering
  First class with Distinction | CGPA: 7.7/10

Skills

- **Design & Simulation:** Cadence Virtuoso, Mentor Calibre (DRC, LVS, Parasitic Extraction), Synopsys VCS, IC Compiler, Xilinx Vivado, TCAD Sentaurus, COMSOL Multiphysics, MATLAB/Simulink, Proteus
- **Programming & HDL:** Verilog-A, VHDL, TCL, C, Python
- **Embedded Systems & IoT:** Arduino IDE, Sensor Integration, IoT Prototyping
- **Systems & Administration:** Windows, Linux (Ubuntu, Redhat, Kali), System & Network Administration, Hardware Assembly, Troubleshooting
- **Documentation & Office:** Microsoft Office (Word, PowerPoint, Excel – Advanced), LaTeX
- **Soft Skills:** Communication, Teamwork, Problem Solving, Leadership

Academic Projects & Works

Designed fundamental analog circuits, including Inverter, Common Source Amplifier, Current Mirror, Operational Amplifier, Differential Amplifier, and Low Noise Amplifier, as well as various components of Phase Locked Loop (PLL). Optimized these circuits using the SCL 180nm, TSMC 65nm technology node in Cadence & also used 180nm BCD process for circuit design, developed layouts, and performed verification with Calibre (Mentor Graphics).

- **Design of 12-bit SAR Analog to Digital Converter for High Speed Applications PG (2023-2025)**
  Successfully completed a full-custom VLSI project on a 12-bit SAR ADC optimized for high-speed operation. Key design blocks included bootstrapped switches, capacitive DAC, dynamic comparator, SAR logic, and asynchronous clock controller. The entire architecture was implemented using Cadence with SCL 180nm PDK and verified at both schematic and layout levels.

- **Analysis of Capacitive Micromachined Ultrasonic Transducer Graduation (2023)**
  Part of a research-based project during graduation under the guidance of the project co-ordinator funded by Defence Research and Development Organisation (DRDO). Designed CMUT (Capacitive Micromachined Ultrasonic Transducer) cell in COMSOL Multiphysics Software, analyzed cell behavior and properties, and later published my work.

- **"Smart Irrigation System with GSM" & "4 Way Pedestrian Traffic System" Pie Infocomm Pvt. Ltd. (2021)**
  During the internship, after training, completed two projects on "Embedded System" & "IoT" respectively. The main objective for the "Smart irrigation system with GSM" was to make a system that can monitor the whole agricultural properties like soil moisture, sensing the water tank, and decide what to do based on the sensor reading as well as notify the farmer with the proper status of the field through SMS. The second project, the "4 Way Pedestrian Traffic System," was a model to reduce road accidents and a solution for pedestrian deaths due to the traffic control system.

- **"Smart Robo-Car" controlled by Voice Command Diploma (2019)**
  Made an Arduino-based Robo-car automated by voice command like movements (speed, rotations). Did the project for the partial fulfillment of my diploma in engineering.

Course & Certifications

- Completed and passed two courses "Analog IC Design" and "Digital IC Design" - from IEEE CASS (Institute of Global Education)
- High-Performance Spectre Simulation - by Cadence Design System (Digital credential badge issued)
- Advanced SKILL Language Programming – by Cadence Design System (Digital credential badge issued)
- Virtuoso Visualization and Analysis vIC23.1 – by Cadence Design System (Digital credential badge issued)
- 5G mmWave Handset System Design – S1: Simulation and Verification of the RFIC (Transceiver) vICADVM20.1 – by Cadence Design System (Digital credential badge issued)
- Jasper Formal Expert – by Cadence Design System (Digital credential badge issued)
- Completed the Learning path of TCAD Sentaurus - from Synopsys Learning
- Completed 3-week Online Summer Training program on VLSI and Embedded Systems conducted by Indraprastha Institute of Information Technology Delhi (earned certificate of excellence performance).
- Foundation of Project Management & Data Analyst – by Google
- TCS YEP Trainee
- Training on Artificial Intelligence - funded by Ministry of Electronics and Information Technology, Govt. of India
- Career Essentials in System Administration – by Microsoft
- Career Essentials in Project Management – by Microsoft
- Critical Thinking and Problem Solving – by LinkedIn Learning & PMI
- Learning FPGA Development – by LinkedIn Learning
- MATLAB Fundamentals – by MathWorks (Digital credential badge issued)

Technical Sessions & Workshop

By ChipIN-CDAC team

- Analog Custom Design Flow
- Semi & Full Custom IC Design Flow
- Siemens Calibre EDA Tool
- RTL Design and Verification

By MSME

- Advanced Entrepreneurship and Skill Development Training Programme on "Nano-scale VLSI design for MSME sectors"
- Recent Trends in VLSI Design

By Synopsys Team

- Five-Day Technical (Online) Workshop on RTL to GDS - II Flow

Publications

- R. Kanjilal and R. Maity, "A Comparative Study between Silicon Carbide and Silicon Nitride based Single Cell CMUT" Journal of Electronics and Informatics, vol. 5, no. 3, pp. 320–334, Sep. 2023. DOI: 10.36548/jei.2023.3.006

Language Proficiency

- Bengali (Native)
- Hindi (Full Professional)
- English (Working Professional)

RAKESH KANJILAL
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