Ankush

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Education

Indian Institute of Technology Bombay, Mumbai, India [2017 - 2021]

- B.Tech in Engineering Physics with a Minor in Electrical Engineering

Technical Skills & Interests

Programming	Python, R, TensorFlor, Verilog/ System Verilog, Verilog AMS, VHDL, C/ C++, Bash
Tools	Cadence Virtuoso, Cadence Simvision/ Viva, PSpice, LTSpice, Jupyter, Arduino IDE, MATLAB, LaTeX
Interests	Machine Learning, Statistics, Reinforcement Learning, Robotics

Professional Experience

Texas Instruments | **Bengaluru, India** *June '21 – Present*

Mixed Signal Design Verification Lead, Analog Power Products Department

- Led the pre-silicon analog design verification effort of **4 power path protection** projects deployed in industrial, automotive and enterprise segments to successful tape-out
- Pioneered the upload of **ML-based PSpice device model** for the TI product **TPS25961** on ti.com
- Developed and meticulously managed comprehensive parametric, system, and manufacturing test plans & verification environments for **Analog Power Products**, ensuring rigorous testing and quality assurance
- Enhanced **SoC test and verification plans** by collaboratively optimizing coverage at both block and system levels through close coordination with Design, Systems, and Test teams
- Guided the industry's first **AI-driven device-level finite state machine generation**, using unsupervised learning to autonomously detect discrete states in analog devices' continuous space, enabling self-learning
- Deployed **machine learning for automated waveform review in Design Verification** in multiple analog centric chips
- Developed and validated multiple digital averaging filter algorithms, achieving a **modified innovation algorithm** with superior outcomes in area, error, frequency, and stability needed for the PMBUS digital telemetry circuit of TPS25990 (eFuse)

CataConn | **Startup** *Oct '20 – Jun '21*

Founder, Guided by Prof Aparna Rao, IITB

- Managed 100+ teaching hours, oversaw a team of 10+ tutors, and guided 500+ students in personalized 1-on-1 IIT-JEE coaching
- Created a ML-driven tutor search platform, optimized SEO techniques, and achieved **300K+ site impressions** in 5 months

Research and Technical Projects

ML Driven PSpice Modeling *Sep '22 – Present*

Presented at TI Technical Leadership Conference, Texas and filed **2 patents** *at the US-PTO*

- Designed an automation suite to efficiently generate precise **top behavioral PSpice models** for analog devices
- Implemented a **hierarchical ML approach** incorporating insights from internal blocks and transient delays
- Successfully produced PSpice device models for **TPS25961** (eFuse) and **TPS1213-Q1** (High-side driver)

Mars Rover Project, IIT-B *Sep '18 – Aug '21*

Electronics Subdivision Head, leading a team of 15 members & build an all-terrain rover prototype

- Designed and implemented the electronics subsystems end-to-end, right from logic units **(RPi, NUC)** and hardware components
- Utilized **potentiometer feedback from actuators**, point cloud data from the on-board depth camera (**Realsense D435**) and Virtual **URDF arm model** to enable intuitive control of the robotic arm
- Worked on **robotic arm automation** by leveraging IK algorithms & depth cam (stereo vision)

Semiconductor Research Corporation *Dec '21 – Present*

SRC is a non-profit research consortium that sponsors semiconductor research and workforce development in academia on behalf of the semiconductor industry

- *[SRC 3160.005]* **Leading technical liaison** and TI coordinator for SRC project with **Prof. Abhijit Chatterjee** from Georgia Institute of Technology on **"ML-Assisted Scalable DfT and BIST of AMS Systems"**
- *[SRC 2982.001]* Technical Liaison for the academia-industry project on **"Machine Learning Assisted Verification Methodology for Analog & Mixed Signal Circuits"** with Anna University Team

Extracurricular/ Volunteer Work

- Served as the **Department Alumni Secretary** for the Engineering Physics Department, Student alumni relations cell(SARC)
- Coordinated and managed events like science and technical competitions, as Techfest-IITB's **Media and Publicity Coordinator**
- Conducted a **"Getting Started on ML"** session for TI DFT, Test, and FuSa engineers
- Received **Texas Instruments Global Recognition** (x2) for excellent work
- Volunteered for **Back to School Campaign** assisting 20,000 students, and **Sapling Plantation Drive** planting 1,000 trees