Supratim Chatterjee

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Skills Summary

- **Tools**: Vmanager, Simvision, JasperGold, Verisium Debug, MATLAB, Audacity, Vivado-Xilinx
- **Protocols**: SPI, I2C, CAN, TPL, JTAG, UART
- **Languages**: SystemVerilog, Python, Verilog, C++, C
- **Frameworks**: UVM, TensorFlow, OpenCV
- **Technical Proficiency**: Design Verification, Signal Processing, Machine Learning,Digital Design,Internet of Things

Experience

- **NXP Semiconductors** Bangalore
  Design Verification Engineer *July 2023 - Present*
  - Verified mixed-signal automotive ICs for LED controllers and battery management systems, ensuring robust functionality and safety compliance.
  - Developed and debugged verification environments using CAN, SPI, I2C , JTAG and UART protocols for reliable on-chip communication and test modes.
  - Executed formal property and connectivity verification using Cadence JasperGold (FPV, Connectivity), authoring SVA properties and constraints.
  - Built Python- and AI-based automation to accelerate regressions, log analysis and coverage reporting, boosting verification productivity.
  - Managed verification codebases with Git and Bitbucket, using branching and code review workflows for reliable releases.
  - Led coverage planning and closure for critical IP blocks, owning verification for 5 successful tapeouts from bring-up to sign-off.

- **Texas Instruments** Bangalore
  Algorithms Intern(AI/ML) *Jan 2023 - June 2023*
  - Developed an automatic audio EQ solution which would help in reducing time to market for new products and reduce manual errors.
  - The automatic audio EQ generates a filter system which gives the desired frequency response based on raw inputs and desired outputs.
  - Automatic Dynamic EQ system also implemented which performs equalization based on signal level of audio.
  - Developed a Voice activity detection system which achieves significant accuracy in low SNR environments and suitable to be deployed on edge devices.

- **TML Business Services Limited (100 % subsidiary of Tata Motors)** Pune
  AI Intern *May 2022 - July 2022*
  - Developed a Vision system to detect key features from vehicle tyres for warranty claim purposes.
  - Utilised various low power technologies such as Raspberry Pi and Jetson Nano for deploying models onsite at industrial locations.
  - Utilised object detection for selecting areas of relevant text from images and video feed.
  - Perform Optical Character Recognition to read text and then generate qr code containing information about the tyre.

Publications

- **A Novel Approach for Automated Speaker Equalization**: IEEE Xplore · Jan 23, 2024 Show Publication

  Traditionally speaker equalization is done manually by audio tuning engineers to achieve desired frequency response.The proposed method predicts the filter coefficients using the desired response and the response to be corrected as inputs.

Projects

- **Automatic Billing System for Shopping Cart (FPGA Based System Design)**: (November 2021 - December 2021)
  - The project helps in automating the process of providing the bill amount to the customer as they add items.
  - When the customer pays the bill, the amount is zeroed and a new transaction can begin.
  - Implemented using the Zedboard Zynq Evaluation and Development Kit.
- **Covid19 detection from Chest X-ray images (Image processing, Machine Learning)**: (February 2021 - April 2021)
  - The application detects Covid19 from Chest X-ray images using Convolutional Neural Networks.
  - It achieved an accuracy of 98 percent on the test/validation dataset.
  - Done as a part of the course Remote Sensing and Image Processing.

Education

- **Birla Institute of Technology and Science, Pilani** Hyderabad, India
  Bachelor of Engineering - Electronics and Instrumentation Engineering; GPA: 8.93 *August 2019 - July 2023*
  Minor: Robotics and Automation
  Courses: Embedded System Design(Graduate Course), Analog and Digital VLSI Design, FPGA Based System Design, Microprocessors and Interfacing, Neural Network and Fuzzy Logic, Artificial Intelligence for Robotics, Machine Learning

Honors and Awards

- **Certificate Of Merit by CBSE(October, 2019)**: Awarded for being among the top 0.1 percent of successful candidates in Physics in Higher Secondary Board (CBSE) across India.

Competitions

- **Flipkart Grid 2.0**: October 2020
  - The problem statement involved creating a stair climber robot with a payload of 3-5 kg.
  - The robot must work on flat surfaces and climb up and down standard stairs in an indoor warehouse.
  - Reached the semifinals of the national level competition.