Vedant Tripathi

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Research Interests

Systems Engineer aiming to contribute to innovative projects at the intersection of Hardware Validation and Machine Learning and practical problem-solving in fields such as System-on-Chip and Device Drivers.

Education

BITS Pilani *2019 - 2024*
B.E. Electrical and Electronics Engineering, M.Sc. Physics Pilani, Rajasthan
CGPA: 8.64/10

Professional Experience

ARM *Jan 2024 - Present*
Graduate Engineer Bangalore, India
- Validated Linux payloads at multi-**SoC** level to ensure data concurrency and correctness
- Developed a unified framework for bare-metal drivers to verify critical **PCIe** features such as ATS, DMA, P2P and MSI
- Engineered a command line tool and website to automate regression testing and provide intelligent debuging data

Société Générale *June 2023 - July 2023*
Software Engineering Intern Bangalore. India
- Enhanced an invoice parser tool with a color-coded data visualization feature
- Created a drag-and-drop application to generate user interfaces wired to relevant API calls

Research Experience

Study of electronic band structure of Perovskite materials *Aug 2023 - Dec 2023*
Thesis | *Supervised by Dr. Debashis Bandyopadhyay* Pilani,India
- Used Density Functional Theory(DFT) for in-depth analysis of $LaGaO_3$'s electronic parameters
- Implemented a computational workflow by scripting the parsing of large-scale DFT datasets
- Provided valuable insights for applications in solid-state electronics and clean energy

Application of AI in wireless communications *Aug 2022 - Dec 2022*
Literature Review | *Supervised by Dr. Sandeep Joshi* Pilani,India
- Analyzed Deep **CNN**s and Conditional **GAN**s for channel estimation in wireless networks
- Proposed a transfer learning approach to model site-specific channels to reduce training time without decreasing the estimation accuracy.

Projects

Detection of Fruit Diseases via Object Detection Techniques *Jun 2021 - Jul 2021*
Project Report | *Supervised by Dr. Dhiraj Sangwan* Pilani, India
- Created and annotated a dataset of healthy and diseased apples by web-crawling
- Reduced industrial scale food waste by utilizing **CycleGAN** to generate numerous images with simulated defects to help train the disease detection model

INWEON GRAMS *Jun 2021 - Jul 2021*
Website | *Tools: Django* Remote
- Alleviated price disparity in farmers markets by developing a backend integrated with **Machine Learning** models, for the detailed analysis of grain quality

Skills

- **Programming Languages:** C, C++, Python, Javascript, Java, MATLAB
- **Hardware Technologies:** System Verification, System On Chip(SoC), ARM Architecture, Embedded Systems, Device Drivers, FPGA
- **Protocols:** UART, PCIe, DDR
- **Web Technologies:** Django, Flask, HTML, CSS
- **Database Systems:** MySQL, PostgreSQL

Selected Courses

- **Computer Programming** CS F111
- **Object Oriented Programming** CS F213
- **Operating Systems** CS F372
- **Digital Design** EEE F215
- **Microprocessors and Interfacing** EEE F241
- **Digital Image Processing** EEE F435
- **Communication Systems** EEE F311
- **Optimization** MATH F212
- **Computational Physics** PHY F313

Honors and Awards

Merit-Cum-Need Scholarship *2019-2024*
BITS Pilani Pilani,India
◦ Awarded **40%** Tuition waiver throughout my degree for excellent academic performance

Amazon ML Summer School *July 2022*
Amazon Remote
◦ Selected from **60k+** applicants to attend a **Machine Learning** bootcamp by industry experts

Volunteer Experience

APAC region Co-chair *June 2025 - Present*
Graduate Committee, ARM Bangalore,India
◦ Coordinated a variety of social and professional development events aimed at fostering a strong sense of **community** and **collaboration** among fresh college graduates

Core Member *Aug 2019 - May 2022*
Creative Activities Club, BITS Pilani Pilani, India
◦ Cultivated artistic development for **500+** students by organizing national art competitions