Aritra Sen

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Work Experience

Honeywell   *May 2022 – July 2022*
Software Engineer Intern   *Bangalore, India*
- Implemented a **real-time anomaly detection** and **asset-failure prediction** system
- Using **Recurrent Neural Networks (RNN)**, increased accuracy by **25%** over the previous random forest-based model, and added ability to **predict anomalies 2 hours into the future**.
- **Developed dashboards** on Honeywell Forge EPM to visualize asset attribute trends, and to notify and raise alerts for expected failures and current anomalies.

Personal Projects

Teamus   Developed a TUI Audio Player with an attractive UI and vim-like key bindings in Go
One Man Army   Developed a simple FPS shooting game in Java, with no 3rd party libraries
pnpm Module   Contributed a pnpm module to the Ansible community general collection
CV Template   Made a Resume template in LaTeX for students, mainly new graduates
Miscellaneous Made an interpreter in Lua and Bash. Scripted in Ansible to download latest programs

Coursework Projects

mmWave Parser and Dashboard   *January 2023 – May 2023*
B.Tech Project · Prof. Sandip Chakraborty   *IIT Kharagpur*
- Developed a GUI dashboard in Tkinter (Python) which graphs real-time data from a mmWave sensor
- Achieved a display rate of 10fps, about $3.4\times$ the pre-existing web based model
- Implemented a threading daemon with shared memory based model which polls and efficiently decodes the data from the sensor, transforms them, and then graphs that in real-time

Image Processing   *January 2022 – April 2022*
Prof. Jayanta Mukhopadhyay   *IIT Kharagpur*
- Devised a fast Le Gall 5/3 wavelet transform in Python for image compression/decompression
- Made a foreground extraction application, and then applied perspective and affine transforms to it
- Developed an automatic image color and saturation correction application in Python
- Developed a fast algorithm to create discrete filters for any odd-numbered filter size

CNN Based Side Channel Attack   *January 2021 – April 2021*
Prof. Debdeep Mukhopadhyay   *IIT Kharagpur*
Implemented a Convolutional Neural Network (CNN) based Side Channel Attack (SCA) to automatically recover an AES key from the power traces of an FPGA, even in the presence of masking

Education

Indian Institute of Technology Kharagpur   *August 2019 – Present*
Bachelor of Technology in Mechanical Engineering   *CGPA: 3.49 / 4.0*
Minor in **Computer Science and Engineering**   *CGPA: 3.90 / 4.0*
Relevant Courses: *Advanced Digital Image Processing and Computer Vision, Hardware Security, Algorithms, Switching Circuit and Logic Design, Usable Security and Privacy, Transform Calculus, Partial DE*

Awards

Google Code Jam   Qualified to Round 2, ranked amongst top 1500 programmers in Round 1
Google Foobar   Completed Google Foobar, a fun, invitation-only challenge by Google

Programming skills

Proficient   C++, C, Python, Go, Lua, Shell, OCaml, Perl, Java, Rust, TypeScript, Verilog, LaTeX
Familiar   Scala, Kotlin, Assembly, MySQL, PostgreSQL, InfluxDB, Redis, VHDL