SRIJAN PABBI

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WORK EXPERIENCE

Hardware/Software Developer   **Palitronica Inc.**   **Jan 2024 – Present**

At Palitronica I work on the design of Anvil Project. Following are some areas where I contribute.
- Edge data acquisition software that interacts with hardware devices and vendored code (C/C++ and C#).
- Edge backend orchestration software (C#).
- Firmware in C, for a chassis control board and a functional unit in the hardware.
- Liase and manage communications with hardware vendors for software support and implementation.
- Act as a liason between hardware and the software teams at the company for seamless integration and swift turnaround times.

Technologies Used: Docker, Azure IoT Edge, .NET, C#, C/C++.

Graduate Researcher   **University of Waterloo, Department of Electrical and Computer**   **Sept 2021 – Dec 2023**
Engineering. Thesis Advisor: *Prof. Sebastian Fischmeister*

Working on Physics Based Cyber-Physical Security [Product Design and Refinement for Palitronica Inc.]:
- Design of (Anvil) a measuring instrument to be used for verification of hardware targets (such as semiconductor ICs), to detect and segregate counterfeit in production environment
- Statistical Variability Analysis of Measurement System: Evaluating and modelling different sources of variability and devising procedures for calibration and long-term repeatability and reproducibility of results.

Research Engineer   **Centre for Development of Telematics (C-DOT), Govt. of India**   **July 2019 – Aug 2021**

As part of Optical Core Networks Group, I worked on development of optical line cards for CDOT's DWDM System [Product Design and Testing].
- Circuit Schematic Design on OrCAD and supervision of PCB CAD in Allegro with high-speed signal integrity constraints.
- Design the architecture of Data and Control Path for SoC
- Developed code for board management microcontrollers, power sequencers, and implemented HDL code for FPGA and PLD systems.

EDUCATION

University of Waterloo, ON, Canada   **Sept 2021 - Dec 2023**
M.A.Sc, Master of Applied Science, Electrical and Computer Engineering   Percentage: *95.80%*
On Statistical Variability Analysis of Anvil (Counterfeit Detection System)
Thesis Advisor: Dr. Sebastian Fischmeister

University of Delhi, New Delhi, India   **Aug 2015 - May 2019**
Netaji Subhas Institute of Technology (NSIT),   Percentage: *77.75%*
{Name Changed to Netaji Subhas University of Technology, w.e.f. 09/26/2018}
B.E., Bachelor of Engineering, Electronics and Communication Engineering

INTERNSHIPS

Software R&D Intern   **Mentor Graphics Noida, Uttar Pradesh, India**   **Dec 2018 - Feb 2019**

Developed a signal and exit handler, annotation infrastructure for software messages and file/data encryption infrastructure in C++ for Symphony, Mentor Graphics' latest High-Performance Mixed-Signal Platform

Project Trainee, Internship   **Texas Instruments Inc. Bangalore, Karnataka, India**   **May - July 2018**

Theoretical & Experimental Analysis of Class-D (LSR) Output Filtering Circuitry: In Low Power Audio Amplifiers Team of TI on a research project for performance benchmarking of the audio amplifier ICs.

OVERVIEW OF SKILLS

Programming: Proficient in C/C++ and C#, Familiar Python and Java.
ML Experience: Data preparation and feature engineering, representation learning, classification algorithms, and deep learning (TensorFlow)
Other: Design of Experiments (DOE), Embedded Design, VHDL, Circuits Design, Git, PCB CAD, Docker.

ACADEMIC PROJECTS

Survey Paper on Security, Privacy and Safety Concerns of Connected and Autonomous Vehicle (CAV)   **Winter 2022**
Systems (CS 658)
As part of a course requirement, did a research survey paper on potential cyber security vulnerabilities and risk areas in existing and upcoming connected and autonomous vehicle systems and suggested defensive and preventative counter measures/deterrents to such risks.

Voter Tendency Prediction based on Marital Status and State of Residence (MSCI 641):   **Winter 2022**
Using the techniques learned in MSCI 641, built a logistic regression model for predicting voter intention using the Pew Research Centre pre polls data for 2008 US Presidential election campaign and 2008 election result. Applied Logistic regression with partially pooled intercepts and slopes for the predictors.

Open-Source Scientific Instrumentation: Undergrad B.E. Project.   **Feb - May 2019**
Built a PCR Thermo-cycler for DNA and nucleic acid amplification (used in every DNA based analysis) with a Wireless Biochemical Reaction Multi-meter (pH and temperature) with data tracking, storage and monitoring with Android app.

Mathematical Alarm Clock (On 8085 using Assembly):   **Jan - May 2018**
Designed an 8085-microprocessor based Alarm clock which prompts a mathematical question to shut off the alarm.

Talkative Tom - Hardware & Embedded Software Implementation: **Aug 2016 - Jul 2017**
Design, fabrication, and testing of an audio storing & playback device with pitch modification using MSP-430 TI-microcontroller / Atmega328P microcontroller, SPI Serial Flash for Storage & class-D amplifier for speaker

TEACHING, MENTORING & VOLUNTEER EXPERIENCE

Teaching Assistant   **University of Waterloo, Department of Electrical and Computer Engineering**
- ECE 250 - Algorithms and Data Structures: Guiding students to build course projects, held weekly   **Winter 2023**
  interactive sessions, and graded assignments and exams
- ECE 198 - Project Studio: Responsible for mentoring 30 groups of over 60 students to conceive, plan,   **Fall 2022**
  build and present/demo a functioning engineering project aimed towards solving a problem in
  domain of climate change.

Student Contributor   **Centre for Electronics Design and Technology (CEDT) NSIT**   **June 2016 – May 2019**
CEDT is a "Maker Space/Open Access Lab" at NSIT. Our work here includes making academic projects, pedagogy focused tools, mentor students, conduct workshops and trainings within and outside NSIT.

General Secretary   **Junoon The Photography Club of NSIT, New Delhi, India**   **Jan 2016 - May 2019**
Leading cultural fest covering teams every year, organising online photography competitions, workshops, finding sponsors, networking with people and other photographers.

Instructor & Mentor
- **Tinkering Workshop for Army Goodwill Schools at IIT Jammu:** Workshop for students studying in schools   **Jan 2018**
  located in remote areas. Introducing the idea of tinkering and DIY electronics. Demonstrated and trained
  students on simple physics-based electronics experiments and projects.
- **Arduinodaya Workshop, NSIT:** Workshop on Embedded Systems design using the pedagogy project pcb   **Jan 2018**
  board Arduinodaya designed by us.
- **TI-CEPD Internship Program NSIT and Chitkara University**: A month-long TI micro-controller based   **June &**
  embedded system design training program at NSIT Campus and a second month at Chitkara Campus.   **July 2017**

INTERESTS AND HOBBIES

Nature, Portrait and Food Photography, Swimming and Skiing.