PULKIT AGRAWAL

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Education

Qualification	University	Institute	Year	CGPA/%
B. E. (Hons.)	BITS Pilani	KK Birla Goa Campus	2015-2019	8.39/10
Intermediate/+2	CBSE	KPS Raipur	2014-2015	94/100
Matriculation	CBSE	KPS Raipur	2012-2013	10/10

Experience

Research Assistant (Remote) - Prof. Akash Kumar — Oct 2020 – Present
CFAED, Technische Universität Dresden — *Dresden, Germany*

- Working on **Google MLIR framework** for seamless computing in heterogenous systems.
- Will be joining in-person from January 2021.

Firmware Engineer — Sept 2020 – Present
Amplify Mobility Pvt. Ltd. — *Hyderabad, India*

- Developing **C/C++** based firmware for AC & DC Electric Vehicle Charging Stations.
- Implementing application protocol, **Open Charge Point Protocol (OCPP)**, for the charging stations designed using **STM32** micro-controller.
- Established communication between the charge point and the central station over **WebSocket**.
- Also, working on peripheral interfacing like RFID, GSM module, and Energy Metering device with **ESP32** over **SPI/UART communication**.

ASIC Design Intern — July 2018 – Dec 2018
Nvidia Hardware — *Bangalore, India*

- Worked with the **SOC Clocks Team** on RTL generation and migration of *Tegra SOC* - '*Orin*' using a novel automated framework.
- Worked on finding port mismatches using **Synopsys SpyGlass Lint** reports. Fixed them by applying net transformation or instantiating the missing modules.
- Wrote **Python** and **Perl** scripts to automate the rectification process.

Technical Skills

Languages: Python, C/C++, Embedded C, Verilog
Developer Tools: Git, PyCharm, Arduino IDE, Keil μVision, Eclipse, ModelSim Altera

Projects

Priority Readers and Writers | *Multi-threaded Programming, C* | — Oct 2019 - Nov 2019

- Implemented a multi-threaded **C** program using **POSIX Threads** library. It gives readers priority over writers concerning a shared resource.
- Used pthreads, mutexes, and condition variables to synchronize access to the shared resource.

Multiplications of 'N' complex numbers | *Multi-threaded Programming, C* | — Oct 2019 – Nov 2019

- Implemented a multi-threaded **C** program using **POSIX Threads** library, for multiplying 'N' complex numbers.
- Created pairs of 'N' complex numbers and performed concurrent multiplication using threads. Stored the result of each pair using dynamic memory allocation.
- Values from multiplication of each pair were then used to create new pairs until the result was obtained.

RISC Processor Synthesis | *Computer Architecture, Verilog* — March 2018 – April 2018

- Implemented 32-bit **MIPS Architecture** with a simple Arithmetic Logic Unit (ALU) and Control Unit in **Verilog**.
- Designed a Hazard Unit to take care of any potential hazards and wrote test benches to test the pipeline architecture.

Approximate Adder Circuits | *Cadence RTL Compiler, Verilog* Jan 2018 – April 2018

- Implemented various single-level and multi-level approximation adder architectures in **Verilog** and compared them with exact architecture.
- Used **Cadence RTL Compiler** to synthesize the design and the post synthesis reports to compare the architectures.

Scheduling Algorithms for Real Time System | *ADA Language, Cheddar Simulator* | Aug 2017 – Sept 2017

- Implemented user defined scheduling algorithms for real-time systems in **ADA Language** used by **Cheddar Simulator** (developed by UC Berkeley.
- Designed a hybrid algorithm, dynamic-priority scheduling class, where the task with zero laxity were given the highest priority.

Relevant Coursework

Operating Systems, Real-Time Systems, Computer Architecture, Data Structures and Algorithms, Network Embedded Applications, Software Development for Portable Devices, Introduction to C Programming.

Position of Responsibility

Undergraduate Teaching Assistant Jan 2019 – May 2019

Real-Time Systems, Under Prof. Biju R

- Mentored a class of 21 postgraduate and PhD students.
- Designed assignment and study material for the students. Conducted Lab sessions and evaluated the lab assignments.

Undergraduate Teaching Assistant Jan 2019 – May 2019

Microprocessors and Interfacing, Under Prof. Anupama KR

- Mentored a class of 300+ undergraduate students.
- Designed and conducted sessions for **8086 microprocessor** based design problems in **Proteus Design Suite**. Evaluated labs on Assembly programming using **MASM Language**.

Undergraduate Teaching Assistant Jan 2018 – May 2018

Microprocessors and Interfacing, Under Prof. Anupama KR

- Mentored a class of 280+ undergraduate students.
- Prepared model solutions for tutorial sessions. Assisted the professor in clearing doubts of the students during the tutorial session.

Undergraduate Teaching Assistant Aug 2017 – Dec 2017

Digital Logic Design Laboratory, Under Prof. Sudeep B.

- Mentored a class of 300+ undergraduate students.
- Assisted the professor in conducting lab sessions. Helped students in implementing digital design problems in bread-board using various ICs, and debugging the issues.

Others

Interested in Photography and Videography. Learned video editing software, **Adobe Premiere Pro** and **Adobe After Effects**. Created a YouTube channel to showcase my projects.