Aman Abhishek Tiwari

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Student undergraduate at IIT Kanpur, with more than 3 years of experience in all levels of product development life cycles, looking for challenging opportunities to deliver valuable contribution.

EDUCATION

- **Indian Institute of Technology Kanpur** — Kanpur, UP, IN
  Bachelor of Science in Physics with Minors in English Literature; CGPA: 6.2/10.0 — *July 2014*
  - **Relevant Courses**: C Programming, Analog and Digital electronics, Computational Physics, Photonic Devices
  - **Achievements**:
    - IIT-JEE 2014 : Secured 99.8 percentile rank
    - Modern Physics Course : One of the best projects in the batch, selected to be installed in the lab
    - Placed second in 'International High Performance Computing Contest' organised by C-DAC and Techriti, IITK

EXPERIENCE

- **Quazar Technologies Pvt Ltd** — New Delhi, IN
  Intern — *May 2015 - July 2018*
  - **Projects**:
    - **nanoREV driver and firmware(May 2015 - July 2015)**:
      - Authored the firmware and driver for the nano-positioner hardware for controlling the xyz movement of the STM scanhead using the new communication protocol called 'QP4'.
      - Firmware written for Atmega644 MCU.
      - Both firmware and driver written in C++11.
    - **72MHz 16-channel simultaneous data acquisition system - QDAMH774E4A (May 2016 - July 2016)**:
      - Developed and tested the 72MHz Data Acquisition System with a capability of measuring and generating analog signals at 72 MSPS (configurable) simultaneously through separate ADC and DAC modules.
      - Authored the firmware and driver for an ARM MCU based motherboard to control the DAS.
    - **Analog Front End - QAFE (May 2016 - July 2016)**:
      - Developed and tested a 4-channel signal conditioner called QAFE for conditioning of the ADC input signals with variable gains upto 1000.
      - Authored the firmware and driver for QAFE in C++11 for an ATmega8 MCU
    - **Oscillation Control Electronics PCB - QOKE (December 2016)**: Designed a four-layer PCB for an oscillation control electronics to be used for the development of an Atomic Force Microscope.
    - **Atomic Force Microscope (AFM) hardware and software design upgrade (May 2017 - July 2017)**:
      - Integrated the QOKE module with the AFM electronics and tested it.
      - Authored a GUI in python to control QOKE module.
      - Designed a High Voltage Amplifier(HVA) electronics PCB for AFM.
      - Developed a method to manufacture Carbon Fibre AFM probes.
    - **Chemical Vapour Deposition System - QRYSTAL CVD (May 2018 - July 2018)**:
      - Supervised the manufacturing and testing of all the electronic modules used in CVD, namely, Power Supply Controller, Chassis Controller, Temperature Controller, and Mass Flow Controller.
      - Helped standardise the manufacturing and testing procedure of the CVD modules and the assembly.

PROJECTS

- **Thesis**: Developed a python package to solve the Advection Equations numerically on an arbitrary quadrangular mesh using Discontinuous Galerkin Method in an attempt to compute the scattering of electromagnetic waves by an arbitrary shaped particle. The code is written to work for 2D meshes and is fully vectorised. It can run on GPU using the ArrayFire-CUDA/openCL library.
- **3-channel 16-bit Data Acquisition System**: Designed and built a Data Acquisition System for a Modern Physics course project to automate the Thermo-electric Generator Experiment in the lab. The DAS enabled me to fully automate the experiment, producing better accuracy, and reducing the experiment time from seven hours to less than two hours.
- **8-channel 24-bit Data Acquisition System with integrated pF capacitance meter and micro-ammeter**: Designed an 8-channel 24-bit DAS with integrated capacitance meter and micro-ammeter electronics to automate the Thermo-electric Generator, Solar Panel, and Dielectric Constant experiment in the Modern Physics Lab, IITK.

TECHNICAL SKILLS

- **Languages**: C / C++ / Python
- **Architecture**: AVR / ARM
- **Protocols**: SPI / I2C / UART
- **Useful libraries and tools**: NumPy / SciPy / Matplotlib / ArrayFire / Sphinx / Python Unit Test / openMPI / Continuous Integration / Make
- **Design Software**: GNU gEDA / FreeCAD / gmesh
- **Version Control**: SVN / GIT
- **OS**: Linux