Vikulp Bansal

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EDUCATIONAL QUALIFICATIONS

April 2018	B.Tech (Electrical Engineering)	IIT KANPUR	9.1/10.0
April 2014	Class XII (Central Board For Senior Education)	DAV PUBLIC SCHOOL KOTA	92.80 %
April 2012	Class X (Central Board For Senior Education)	DAV PUBLIC SCHOOL KOTA	10.0/10.0

SCHOLASTIC ACHIEVEMENTS

- Secured AIR **–** 344 among 1.26 lakh students in JEE (Advanced) 2014.
- Secured AIR **–** 1366 and State Rank **–** 102 among 13 lakh students in JEE (mains) 2014.

PROJECTS

360 Video Processing & Rendering: MAY'16 - Present

Research Track Exploration (RTE) Program - Under Professor Yao Wang, Department of Electrical and Computer Engineering, NYU

The aim was to remove redundancy in 360 video information and implementing various streaming techniques to process video using less bandwidth. The convention was to use equi-rectangular projection for rendering.

- Used Facebook API of transform filter to convert video from equi-rectangular to cube-map layout.
- Implemented UV mapping to render this cube-map layout into a cube geometry and morphed it into a sphere using vertex normalization techniques. It reduced the redundancy of equi-rectangular layout by a significant amount.
- Used DASH (Dynamic Adaptive Streaming over HTTP) server and a client to visualize the streaming operations.
- Separated the video into segments with different view ports and send them individually on demand. These different quality bit-rate videos can be sent to client depending on the bandwidth available to the user.

Data Extraction from HUD of Aircraft Pilot: DEC'15 – MAR'16

Under Professor K.S. Venkatesh, Department of Electrical Engineering, IIT Kanpur

The objective of the project was to extract letters and symbols which constituted data on the HUD (Heads Up Display) of an aircraft pilot.

- Morphological opening was implemented on a grayscale version of the image to make the background uniform.
- Background subtraction enabled clear distinction of symbols to be extracted.
- **Otsu's** method for thresholding was implemented which allowed the successful conversion of grayscale to binary image.
- The unrecognized symbols and the extra regions included in the final image were identified.

Web Enabled Security Lock: MAY'15 - JUL '15

Under Electronics Club, SNT Council, IIT Kanpur

- Designed and made a web enabled security lock with biometric recognition. It verifies valid entries via fingerprint reader and logs the data related to the entering users in a database on a secure website.
- Used flask framework and Raspberry Pi as a web server.
- Made an android app for accessing, enrolling the clients and giving remote authentication for guest entry.
- Implemented multithreading to run more than one instances of python simultaneously and made full hardware for project.

FPGA Design Challenge: MAR'16

Under ECDC, Techkriti'16, IIT Kanpur

- Applied Discrete Cosine Transform (DCT) on an 8*8 matrix containing pixel values of an image in Verilog.
- Implemented quantization and Inverse DCT to get the compressed image. Successfully secured 3rd position in Competition.

Logging Dashboard Using ELK Stack: JUNE'16 - Present

Under Research Track Exploration (RTE) program, Hacking Tasks of NYC Office

- Implemented a setup for collecting logs from various servers and visualizing them on a dashboard.
- Implemented elastic-search, logstash and kibana (elk) stack and used gelf logging driver for forwarding logs to logstash.
- Used Docker containers to run services on local machine and deployed these containers on kubernetes.

App Development: AUG'15

Under Code.fun.do, Hackathon, Microsoft

- The application aimed to connect customers to nearest service providers for quick and effective solutions to their problems.
- Leveraged Microsoft azure service for storing our data on cloud and its quick retrieval.
- Used GPS sensor data and Bing maps API to index service centres within a certain radius of customer.

TECHNICAL SKILLS

Programming Languages	C, C++, PYTHON, HTML, CSS, PHP,JAVASCRIPT,MYSQL
Softwares, libraries and Utilities	GNU OCTAVE, AUTODESK INVENTOR, MATLAB, LATEX, GIT, VIM, ANDROID STUDIO
Hardwares Used	ARDUINO, RASPBERRY PI, ATMEGA

RELEVANT COURSES

Electrical: Signal and Systems, Microelectronics, Principles of Communications, Control Systems and its Analysis.

Other: Fundamentals of Computing, Linear Algebra, Applied Game Theory, Probability and Statistics, Partial Differential Equations.