Abhishek Yadav

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ACADEMIC DETAILS

Examination / Degree	Institute	Year	CPI/%
B.Tech , Electrical Engineering	IIT Kanpur	2016-present	8.5/10
Class XII (CBSE)	Delhi Public School, Kanpur	2016	95.6
Class X (ICSE)	City Montessori School, Lucknow	2014	92.2

ACHIEVEMENTS

- Secured 2^{nd} **global rank** in 2019 and 12^{th} **global rank** in 2018 for IIT Kanpur in Intelligent Ground Vehicle Competition held at Oakland University, Michigan.
- Achieved All India Rank **1348** in IIT-JEE Advanced 2016 out of approximately **2 lakh** qualified students
- Secured **99.9 percentile** in IIT-JEE Mains 2016 amongst approximately **12 Lakh** students.

EXPERIENCE

- **Compressed Video Action Recognition on Edge Devices**

  Adobe Big Data Experience Lab | **Research Intern** under Subhrata Mitra — May'19 - July'19

  - Enabled Video analytics over edge devices using a deep video codec for **faster inference** and **low storage**.
  - Performed various **computer vision-tasks** on low dimensional representation of videos.
  - Showed **increase in the inference speed** and and **reduction in memory footprint** for the action recognition.
  - Received a **Pre-Placement offer** at the end internship based on the work during the internship.

- **Simple Secure Client :** CS628 **Computer System Security**

  Prof. Pramod Subramanyan, IIT Kanpur — Jan'18 - May'18

  - Implemented an **encrypted dropbox** on a zero trust malicious server to store files of many different users securely.
  - Designed the whole system in **GoLang**, assuming that only the **public-key** and username of users is not compromised.
  - Implemented tasks such as **sharing of files**, **revocation**, **fast append** to mimic real world secure database.
  - Used algorithms like as Argon2, RSA, AES and Digital Signatures to achieve aformentioned tasks.

- **Backened Developer, RTE Internship**

  Prof. Manindra Agrawal, New York Office, IIT Kanpur — May'18 - July'18

  - **Upgraded** version of Kamon core from 0.6 to 1.0 and removed dependency of the platform on StatsD
  - Included **Prometheus reporter** of Kamon for **monitoring** the total count of HTTP request over time on a web User Interface.
  - Documented **HTTP endpoints** by saving requests and their corresponding responses using **Postman**

POSITION OF RESPONSIBILITIES

- **Head, Team IGVC IITK** — July'18 - Jan'19
  - Served as Head of Team IGVC for IIT Kanpur, responsible for Computer Vision department of the vehicle
- **Secretary, Programming Club, IIT Kanpur** — July'17 - May'18
  - Organized various programming competitions and lectures on topics related to programming

MAJOR PROJECTS

- **Asynchronous Distributed Consensus Optimization**: EE698V Optimization for Big Data

  Prof. Ketan Rajwat, IIT Kanpur — Aug'19 - Nov'19

  - Developed an **asynchronous algorithm** for decentralized distributed convex optimization problem with Sketched Gradient
  - Used **Stochastic ADMM** with variance-reduced random linear sketches of the gradient (SEGA) as an unbiased estimator
  - Achieved a time complexity of **O(log(t)/t)** for convex L-smooth functions and and **O(1/t)** for convex, L-smooth functions
  - Found faster **wall-clock run time** for the Asynchronous algorithm in comparison to the Synchronous version

- **Senior Team member, Team IGVC IITK**

  Intelligent Ground Vehicle Competition, Oakland University, Michigan, USA — Nov'17 - Jan'19

  - Developed **asynchronous architecture** using ROS for exchange of data with low latency.
  - Developed a robotic ground vehicle capable of **autonomous navigation** on grassy terrain while avoiding obstacles placed on its way.
  - Worked for **Lane Detection and Classification** by implementing U-net and Fast-SCNN for semantic segmentation in real time.

- **Visual Recognition :** CS783 **Visual Recognition**

  Prof. Vinay P. Namboodiri, IIT Kanpur — Jan'18 - May'18

  - Performed **unsupervised muti-object tracking** using techniques such as domain adaptation,YOLO and kalman filtering.
  - Implemented deep image matching using **SIFT / DELF** and fine-grained classification using **Bi-linear CNN**.

- **Learning Graph Representations :** CS771 Introduction to Machine Learning

  Prof. Piyush Rai, IIT Kanpur — Aug'17 - Dec'17

  - Modelled Ego network as a graph and learned task aware embedding for each node.
  - Established baselines for **link prediction** and **node classification** on graphs, visualized the results using **PCA**
  - Compared various techniques for such as **GraphSAGE, GCN, Node2Vec** on Zachary Karate Club dataset.

- **Backdoored Neural Networks :**

  Prof. Siddharth Garg, New York University — May'18 - July'18

  - Inserted backdoors for mis-classification of specific classes in **one-shot recognition** as well as **object detection**.
  - Poisoned **Siamese Network and Faster-RCNN** for one shot recognition and object detection respectively.

RELEVANT COURSES

Computer System Security	Algorithms II	Optimization for Big Data
Data Structures and Algorithms	Introduction to Electronics	Machine Learning for Signal Processing
Probability and Statistics	Visual Recognition	Introduction to Machine Learning

TECHNICAL SKILLS

Languages	Python	C / C++	GoLang	Java(familiar)	HTML/CSS(familiar)	
Frameworks	Pytorch	ROS	OpenCV	Tensorflow	Keras	Scikit-Learn