

Vaibhav Nagar | Senior Undergraduate

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Education

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| B.Tech., Computer Science And Engineering <i>Indian Institute of Technology Kanpur</i> | 9.1/10.0 <i>2014-present</i> |
| AISSCE, Class XII CBSE Board <i>Ramakrishna Vidya Mandir, Gwalior</i> | 95.6% <i>2014</i> |
| AISSE, Class X CBSE Board <i>Venus Public School, Gwalior</i> | 10.0/10.0 <i>2012</i> |

Scholastic Achievements

- Received **Academic Excellence Award (IIT Kanpur)** for outstanding academic performance in the year **2014-15**
- Secured **All India Rank 486** (amongst around 1.5 lakhs candidates) in **IIT-JEE (Advanced) 2014**
- Secured **All India Rank 926** (amongst over 14 lakhs candidates) and **State Rank 15** with **All India Percentile Score-99.93** in **JEE (Mains) 2014**
- Awarded **KVPY (Kishore Vaigyanic Protsahan Yojana) 2014 scholarship** and secured **All India Rank 466** after getting selected in both written exam and interview
- Awarded **Inspire Scholarship** by virtue of performance within **top 1%** of Senior School Certificate Examination 2014
- Secured **All India Rank 355** (amongst around 1,93,000 candidates) in **VITEEE 2014**

Internships

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| Adobe Systems, Bangalore, India | <i>May'17 - July'17</i> |
| <ul style="list-style-type: none">• Research internship in a team of two on the project Multi-Task Learning on web analytics data under the supervision of Senior Research Scientists (Adobe Research)- Shiv Kumar Saini and Vishwa Vinay• Implemented various multi-task learning models to test the hypothesis that jointly building related models is more effective than doing them independently• Exploited the creation of a representation that is common across tasks using multi-task learning as a customer profile for lookalike modeling and clustering | |
| Monet Networks Inc, Gurgaon, India | <i>May'16 - July'16</i> |
| <ul style="list-style-type: none">• Worked as Software Developer to implement various features to enhance Monet's non-verbal cues (NVCs) analytic platform which provides a way to capture, track and analyze video content in real-time and allows users to find and rate different brands' content• Developed a feature of analyzing text to get emotions out of it using a tone analyzer api and to detect gibberish texts, a model of character to character transitions from bunch of English text based on Markov's chain• Created a portal to add campaigns of videos, images and texts through backend and frontend and integrated it with Wowza streaming engine and Webcam-js to capture snapshots in real time based on flash in browser | |

Projects

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|---|------------------------|
| Domain Adaptation Using GAN <i>Course project for CS698U- Visual Recognition under Prof. Vinay P. Nambodiri</i> | <i>Aug'17 - Nov'17</i> |
| <ul style="list-style-type: none">• Project aimed at Unsupervised Domain Adaptation through Generative Adversarial Network (GAN) based on the paper "Bousmalis, Konstantinos, et al. Unsupervised pixel-level domain adaptation with generative adversarial networks"• Implemented GAN and classifiers in which the basic idea is to train the generator to produce target domain data conditioned on source domain data and train classifier on generated data without using the target domain labels• Experimented with other GANs keeping the same core architecture on datasets- MNIST to USPS and MNIST to MNIST-M | |
| Active Transfer Learning <i>Course project for CS772- Probabilistic Machine Learning under Prof. Piyush Rai</i> | <i>Aug'17 - Nov'17</i> |
| <ul style="list-style-type: none">• Implemented the approach of combining Active Learning and Transfer Learning as described in "Guo, Yuchen, et al. Active Learning with Cross-Class Similarity Transfer AAAI, 2017" on CIFAR-10 and MNIST handwritten digits dataset• Used similarity propagation method on class-class and sample-sample similarity graph based random walk for information propagation and augment the labeled set by selecting samples for expert labeling using Uncertainty Sampling | |

Securing Zoobar Web-Application

Jan'17 - Apr'17

Course projects for CS628- Computer Systems Security under Prof. Sandeep Shukla

- Exploited system security vulnerabilities in zoobar web application using buffer overflow, code injection, return-to-libc attack and browser-based attacks like cross-site request forgery, XSS scripting, side channels and phishing, profile worm and password theft
- Improved zoobar web server and its services using privilege separation and server-side sandboxing

C++ Compiler

Jan'17 - Apr'17

Course project for CS335- Compiler Design under Prof. Amey Karkare

- Implemented an end-to-end compiler for C++, written in Python, which generates code in the MIPS architecture
- Compiler supports various features- native data types, variables and expressions, control structures, conditionals, loops, output statements, arrays, functions, recursion, pointers

Research Catalogue

Jan'17 - Apr'17

Course project for CS315- Principles of Database Systems under Prof. Medha Atre

- Designed a web application using MySQL database which is stored as InnoDB storage engine to create an easily maintainable and flexible bibliographic database of research papers
- Optimized SQL queries by creating indexes after selecting the most frequently used query and creating its plan tree

Computer Network Projects

Aug'16 - Nov'16

Course projects for CS425- Computer Networks under Prof. Sandeep Shukla

- Built a concurrent HTTP Server with hyperlinked directory feature and concurrent HTTP proxy server using socket programming
- Implemented an STCP (Simple-TCP) transport layer which provides a connection-oriented, in-order, full duplex end-to-end delivery mechanism and implemented an internet router to handle ARP, ICMP echo requests and TCP/UDP packets with proper error handling

NachOS

Aug'16 - Nov'16

Course project for CS330- Operating Systems under Prof. Mainak Chaudhuri

- Extended the NachOS operating system to perform various system calls such as Fork, Join, Exec, Sleep and Exit
- Implemented various scheduling algorithms like UNIX scheduler, FIFO, round robin and non-preemptive with burst estimation and evaluated their performance and implemented shared memory and demand paging algorithms

Real-Time Polling

Aug'16 - Nov'16

Course project for CS252- Computing Laboratory under Prof. Piyush Kurur, Satyadev Nandakumar

- Created a web application which provides an interface for conducting polls and displaying the results in real time
- Built using Django framework integrated with PostgreSQL for database management
- Established persistent connection between the server and clients using websockets and asyncio

Technical Skills Set

Programming C, C++, Python, Shell, GNU Octave, L^AT_EX, Java(basics), Verilog, Assembly(x86)

Web-Dev HTML, CSS, JavaScript, JQuery, PHP, SQL

Platforms/ Tools Windows, Linux, Tensorflow, Keras, PyTorch, Vim, Git, GNUPlot, SQLite, Android Studio

Relevant Courses

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| • Probabilistic Machine Learning | • Compiler Design | • Applied Stochastic Processes |
| • Visual Recognition | • Operating Systems | • Complex Variables |
| • Topics in Computer Vision | • Principles of Database Systems | • Probability and Statistics |
| • Algorithms -II | • Computing Laboratory-I, II | • Discrete Mathematics |
| • Data Structures and Algorithms | • Computer Organization | • Mathematical Logic |
| • Computer Systems Security | • Fundamentals of Computing | • Abstract Algebra |
| • Computer Networks | • Theory of Computation | • Linear Algebra and ODE |
| • Machine Learning (Coursera) | | ‡ : Ongoing Courses |

Extra Curriculars

- Worked in Alumni Contact Program, IIT Kanpur, for four months as a Junior Executive to ensure strengthening of the Alumni Network of the institute and gained experience by working in office like environment
- Participated in **Code.Fun.Do 2015 (Microsoft)**, a 24 hours long appathon and certified for completion
- Certified for exemplary performance in NCC (National Cadet Corps) and become a bonafide cadet in the first year