Vaibhav Nagar | Senior Undergraduate

F-317, Hall-9, pin-208016, IIT Kanpur, India

+91 7843850644 • vaibhavn@iitk.ac.in • vaibhavnaagar.github.io/vaibhavn/

Education

B.Tech., Computer Science And Engineering — **9.1/10.0**
Indian Institute of Technology Kanpur — *2014-2018*

AISSCE, Class XII CBSE Board — **95.6%**
Ramakrishna Vidya Mandir, Gwalior — *2014*

AISSE, Class X CBSE Board — **10.0/10.0**
Venus Public School, Gwalior — *2012*

Scholastic Achievements

- Received **Academic Excellence Award (IIT Kanpur)** for outstanding academic performance in **2014-15** and **2016-17** year
- 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

Patents

- [USPTO Patent Pending] Vaibhav Nagar, Aishwarya Mittal, Shiv K. Saini and Vishwa Vinay. 2018. *Predictive modeling with entity representations computed from neural network models simultaneously trained on multiple tasks*. Adobe Systems, San Jose, United States.

Internships

Auquan, India — *Jan'18 - Apr'18*

- Worked as a Quant Researcher Intern remotely on developing predictive models for various trading strategies.
- Built LSTM based models for predicting fair value of various stocks using time series data and co-integrated features.

Adobe Systems, Bangalore, India — *May'17 - Jul'17*

- Research internship on the project Multi-Task Learning on web analytics data and 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 — *May'16 - Jul'16*

- Worked as a Software Developer to implement various features to enhance Monet's 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 and created a portal to add campaigns of videos, images and texts and integrated it with Wowza streaming engine

Projects

Wikipedia Map API — *Mar'18 - Apr'18*

Course project for CS653- Functional Programming under Prof. Amey Karkare

- Implemented an API server and parser to get the ordered wiki links and page titles of wikipedia articles using MediaWiki API which can be used to compare and find connections between the wikipedia articles
- API server runs over Haskell stack and web applications request particular actions by suitably choosing query parameters and parser parses the HTML text of wikipedia pages to extract link in a particular order

Domain Adaptation Using GAN — *Aug'17 - Nov'17*

Course project for CS698U- Visual Recognition under Prof. Vinay P. Namboodiri

- 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 GANs 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

Active Transfer Learning *Aug'17 - Nov'17*

Course project for CS772- Probabilistic Machine Learning under Prof. Piyush Rai

- 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, Python, C++, Shell, Haskell, GNU Octave, LaTeX, Java(basics), Verilog, Assembly(x86)

Web-Dev: HTML, CSS, JavaScript, Jquery, PHP, SQL

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

Relevant Courses

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

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