Nishant Gupta

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Computer Science and Engineering,
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ACADEMIC DETAILS

Year	Degree	Institute	CPI/%
2017 (expected)	Bachelor of Technology	IIT Kanpur	9.4/10.0
2013	HSCE	Shivpuri Public School,Ashoknagar	93.60%
2011	AISSCE	Tara Sadan School,Ashoknagar	9.6/10.0

SCHOLASTIC ACHIEVEMENTS

- Awarded **Academic Excellence Award** (IITK) given to top 5% students on the basis of academic performance.
- Secured **AIR-248** out of 0.15 million shortlisted students in JEE-Advanced 2013.
- Qualified **Regional Mathematical Olympiad**(Rajasthan Region) that selects only 40 students from Rajasthan.
- Selected for the **KVPY** (Kishore Vaigyanik Protsahan Yojana) in 2013.

TECHNICAL SKILLS

- **Languages :** C/C++, Python, R, Haskell, Javascript, Scala, x86 Assembly, Perl
- **Operating Systems :** Linux(Gentoo, ArchLinux, NixOS), Windows
- **Frameworks/Libraries :** django, OpenCV, Parsec, data.table, dplyr, ggglot, cabal, Angular, spark
- **Softwares :** Emacs, Vim, AndroidStudio, IntelliJ Idea, RStudio
- **Others :** git, svn, ElasticSearch, LaTeX, css/scss, SQL, HTML, Bash

AREAS OF INTEREST

Functional Programming, Machine Learning, Computer Networks, Operating Systems, Graph Theory, Optimisation, Algorithms, Theory of Computation

PROFESSIONAL EXPERIENCE

- **Goldman Sachs**(Summer Employee) *May'16-Jul'16(10 weeks)*
  - **Job Failure analytics**
    - Improvised Job Failure prediction model and automated the crucial task of structured analytics.
    - Proposed and tested root cause detection model which leverages micro and macro failure patterns to detect probable failure causes and sends recommendation to concerned teams.
  - **ETA and SLA Breach prediction model**
    - Transformed ETA and SLA prediction model to account for more complex dependencies.
    - Fabricated and partially implemented a dynamic model which
      - Can dynamically incorporate Job failure model to alter the prediction.
      - Changes prediction throughout the day in reaction to various jobs and telemetries.
      - In manual testing, exhibited twice the recall and a slight increase in precision
  - Rewrote the entire data ingestion pipeline for both models which now accounts for 90 percent of jobs compared to 60 percent in earlier pipeline and with 40 percent more efficiency.
- **Altisource Business Solutions**(Technology Intern) *May'15-Jul'15(8 weeks)*
  - Worked on the projects **Actor Equivalence and Identity Stitching** and **Event Data Clustering** for the company's consumer analytics product 'Pointilist'
  - Designed an algorithm for solving the actor equivalence problem (Established a relation between actors and streaming events) for single Multiple platforms.
  - Built a generic framework that takes varying Consumer data from different tenants and Processes, normalizes and Clusters it to derive meaningful inferences.

WORK EXPERIENCE

- **Hscraper** - *github:* `Nishant9/Hscraper`, *hackage:* `Hscraper`
  - *Mentor: Prof. Piyush P Kuroor* *Aug'15-Dec'16*
  - **Haskell** library to scrape and crawl webpages.
  - Includes an HTML Parser and a basic query language parser, both written using **Parsec**.
  - Query language supports contiguous filters with optional attribute matching.
  - HTML Parser parses correct HTML by itself and has tidyhtml bindings to correct malformed html.
  - Includes a Network module that is a wrapper around **http-conduit** to allow for bulk requests with varying parameters and responses.
  - Current maintainer of library on hackage.

- **Object detection and Multiclass classification of Video Surveillance feed**
  - *Mentor: Prof. Harish Karnick* *Jan'16-Apr'16*
    - Achieved greater than 95 percent accuracy and precision using Convolutional neural networks for feature extraction and SVM for classification
    - Used VGG-16 caffe model and python implementation of Faster R-CNN paper published in NIPS 2015
    - Takes around 1sec/frame on a laptop GPU(Nvidia GTX-755M)
    - Also Tried various combinations of tradional approaches for feature extraction from images. Some of them are :
      - Mixture of Gaussians from OpenCV for ROI extraction and own implementation of Non-maximum Suppression for refinement of ROI
      - Experimented with different feature representations of ROI like HSV, HoG and SIFT for training the classifiers.
      - Achieved greater than 85 percent accuracy and greater than 80 percent precision using Linear SVM as classifier and HoG feature representation with other refinements.
- **Scala Complier** - *github:* `Nishant9/scalaCompiler`
  - *Mentor: Prof. Subhajit Roy* *Jan'16-Apr'16*
    - Implemented Scala to X86(AT&T Syntax) in python using ply(Python lex yacc)
    - Supports basic data types, loops, switch statements, conditionals, n dimensional arrays, nested functions, recursion
    - Implements dynamic scoping, type checking and basic type inference
- **Code Cloud** - *github:* `Nishant9/ccloud`
  - *Mentor: Prof. Sumit Ganguly* *Jan'16-Apr'16*
    - Code management website mainly focused on Competitve programming
    - Uses django for backend, bootstrap3 for frontend and sqlite for database
    - Allows public and private code sharing, is fully mobile compliant, implements basic search functionality.
- **NachOS extension** - *Under Prof. Mainak Chaudhari* *Aug'15-Dec'15*
    - Implemented system calls pertaining to Fork, Exec, Join, Yield, Sleep and Exit for NachOS (a rudimentary OS)
    - Programmed different signal handling methods, process scheduling and page replacement algorithms and evaluated their relative performance
    - Implemented and tested various synchronization primitives like mutex and semaphores
- **Online Web Platform** - *Under Prof. Manindra Agarwal* *Nov'14-Present*
    - Implemented Google Drive Integration and various small features for a web platform that uses **Dart** on front-end and **Scala** on back-end.
    - Designed and developed the frontend using bleeding edge frameworks like **AngularDart**, Polymer, etc
    - Currently developing Android app for same web platform.
- **Sentiment Analysis of Social Media** - *Takneek'14* *Aug'14*
    - Application developed during Web-Dev, Takneek'14 and secured **1st** position.
    - Provided an interface to analyse the past and present social sentiment of brands and their products.
    - Identify 'good' and 'bad' features of the product and suggest weak points to improve it.
- **Triangulation of Image** - *Programming Club, IIT Kanpur* *Jun'14-Jul'14*
    - Renders image using only triangles and gives the sense of image.
    - Uses **OpenCV** for Image Processing and Manipulation, Tkinter for GUI and webcam support.
    - Uses Delaunay Triangulation so that image is aesthetically pleasing.
- **Location Extraction and Visualization of News items** - *ACA, IIT Kanpur* *Feb'14-Apr'14*
    - A webapp that plots news on a world map using various APIs for location resolution, news fetching and map plotting.

RELEVANT COURSEWORK

CS330 - Operating Systems(**A***)
CS345 - Algorithms II(**A**)
CS653 - Functional Programming(**A**)
CS252 - Computing Laboratory - II(**A***)
CS210 - Data Structures and Algorithms(**A***)
CS345 - Software Engineering(#)
CS653 - Computer Networks(#)
CS340 - Theory of Computation(**A***)
CS335 - Compiler Design(**A**)
CS771 - Machine learning(**A**)
CS251 - Computing Laboratory - I(**A**)
CS201 - Discrete Mathematics(**A**)
MSO201 - Probability and Statistics(**A**)

- Ongoing

MISCELLANEOUS

- *Seceretary* of Programming Club, IIT Kanpur. *2014-2015*
    - Part of a team of 15 members made to manage the activities of the Programming Club, IITK
    - Mentored freshmen for various Programming club competitions.
- *Co-ordinator*, Funzone, Udhghosh'14 - Annual Inter-College Sports Fest of IIT-Kanpur. *Sep'2014*