Saideep Reddy

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Education

IITB (Indian Institute of Technology Bombay)

• Graduated with honors in Electrical Engineering — Major CGPA - **8.23/10**

Narayana Junior College

• Board of Intermediate Education — **94%**

Anjali School of Excellence

• Board of Secondary Education — **96%**

Research Interests

Machine Learning & Data Sciences

Optimization Algorithms & Techniques

Publication

Journal - Annals of Operations Research

Date Submitted — *Dec. 2016*

- Approximating convex envelopes using linear programming: *Akhil Shetty,* ***Saideep Reddy****, Vivek S. Borkar, Neeraja Sahasrabudhe*, submitted to Annals of Operations Research (ANOR)
- Developed a linear program using Oberman's characterization of convex envelope for approximating any non-convex function with a convex envelope

Scholastic Achievements & Scholarships

Achievements

2012	**All India 91st rank** in IIT-JEE among 5 lakh students	*National*
2012	**All India 26th rank** in AIEEE among 10 lakh students	*National*
2012	**State Rank 88** EAMCET - Engineering and Medical Common Entrance Test among 380,000 students	*State*
2009	**top 300 in the country** Indian National Mathematics Olympiad (INMO)	*National*
2009	**State Rank 3** State Science Talent Search Examination (SSTSE) by Unified Council	*State*

Scholarships

2012	**KVPY scholar** Awarded prestigious KVPY scholarship by the Department of Science and Technology, India (DST)	*National*

Research and Projects

Bachelor Thesis, Non-Convex Optimization (Prof. Vivek Borkar) — *Mumbai, India*

Department of Electrical Engineering, IIT Bombay — *Dec. 2015 - May. 2016*

- Developed a linear program for approximating any non-convex function with a **convex envelope**
- Incorporated Oberman's characterization of the convex envelope and the ideas of linear function approximation and **constraint sampling** of de Farias and Van Roy to reduce the curse of dimensionality
- Demonstrated the performance on various non-convex functions by simulating the linear program in MATLAB

Neuromorphic Engineering (Prof. Bipin Rajendran) — *Mumbai, India*

Undergraduate Research — *Apr. 2013 - May. 2013*

- Learned about various spiking neuron models and simulated them in MATLAB. Implemented a back propagation algorithm for input-output mapping of a neural network
- Worked on design of spiking **neural networks** and learning rules to train them

Face recognition - Eigenfaces Vs Fisherfaces — *IIT Bombay*

Digital Image Processing - Guide: Prof. Ajit Rawade — *Autumn 2014*

- Implemented a face recognition system using Fisher Faces technique and performed a comparative study with Eigen Faces technique
- Demonstrated the performance of Fisherfaces Vs Eigenfaces/PCA under various conditions of illumination and facial expressions

Work Experience

Sentiment Analysis
Bangalore, India

Analyst - Actify Data Labs
Nov. 2017 - Present

- Developed algorithms for identifying sentiment across audio files using **Chroma, Spectral and MFCC coefficients**.
- Implemented the solution in **Django** which includes functionalities like uploading, listening, scoring the audio file.

Mammography
Bangalore, India

Analyst - Actify Data Labs
Nov. 2017 - Present

- Developed algorithm to identify tumours in breast using convolutional neural networks (**Mask R-CNN** implementation and Region Of Interest pooling.)
- Worked with local hospital for beta testing the solution.

Operation Clean Money, Govt. of India
Noida, India

Analytics Specialist - Opera Solutions
Mar. 2017 - Oct. 2017

- **Demonetization Data Processing:** Collation, cleaning and structuring of the demonetization data from Income Tax Dept. database which includes standardization of names (Levenshtein distance calculation, fuzzy matching, Soundex, DMetaphone). Integrated Income Tax Returns, Nature of Business data etc. with it
- Developed a response likelihood model (**Logistic Regression & XGBoost**) for target segment during demonetization which predicts the likelihood to respond and the likelihood to voluntarily disclose income under PMGKY
- **Relationship Identification & Clustering** for identifying clusters of closely related PANs, starting with high risk PANs
- Identified potential **Shell Companies** based on their financial profile and the directors involved in those companies

Cargo Prediction - Major Airline Industry
Noida, India

Analytics Specialist - Opera Solutions
Jun. 2016 - Feb. 2017

- Built ensemble of gradient boosting models (**xgboost**) for predicting cargo show-up (no-show, exact-show and high/low-show) rate
- Accurate prediction of the shipments tendered weight within 5 percent error range for **96%** of the bookings
- Developed end-to-end system for training and scoring the show-up rate in **Signal Hub**, an end-to-end Big Data analytics platform

Altisource Business Solutions Pvt Ltd
Mumbai, India

Summer Intern
May. 2015 - Jul. 2015

- Researched and evaluated quantitative model implementations for **loss mitigation problems** (debt modifications) and proposed use of new algorithm (Genetic Algorithm) for improving performance
- Evaluated **Pattern Search** and **Genetic Algorithm**, and used them in solving optimization problems, also analyzed the effects of constraints and initial point in these techniques

Course Projects

Mathematical Function Plotter
IIT Bombay

Digital Lab Project - Guide: Prof. M. B. Patil
Spring 2014

- Designed a mathematical function plotter in VHDL which uses an LCD screen connected to FPGA board for display
- Interfaced keypad and LCD to FPGA board where we type the coefficients and function value gets displayed on LCD

16-bit Processor Design
IIT Bombay

Microprocessors - Guide: Prof. Virendra Singh
Autumn 2014

- Designed a 6-Stage pipelined 16bit RISC Processor incorporating hazard mitigation techniques including forwarding and branch prediction. Simulations were carried out using VHDL

Finite Machine Based Controller
IIT Bombay

Microprocessors Lab - Guide: Prof. Virendra Singh
Autumn 2014

- Designed an optimal datapath (registers, functional units and point-to-point communication based steering logic) and implemented on FPGA using a sysnthesizable code in VHDL

Coursework

Foundations of Machine Learning	Stochastic Optimization	Probability and Random Processes	*IIT Bombay*
Linear Optimization	Digital Image Processing	Intro. to Cryptography	
Network Security	Adv. Computing in Elec. Engineering	Computer Networks	
Game Theory	The Data Scientist's Toolbox	R Programming	*Coursera*
Getting and Cleaning Data	Exploratory Data Analysis	Reproducible Research	
Deep Learning Specialization*	Machine Learning*		

Skills

Programming and Web Development

• Python • Django • R • Matlab • C++ • C • VHDL • HTML • CSS • Assembly

Technical Softwares

• Arduino • Solid Works • NGSpice • LaTeX • AutoCAD • Keil • GNU Radio

Business Communication Skills

• Certified in business communication by Dale Carnegie & Associates Inc.

Extracurricular Activity

Alumni Secretary for Electrical Engineering Dept. *IIT Bombay*

Core Member - Department Council

- Conducted Student Alumni Meet (SAM) with Student Alumni Relation Cell (**SARC**) which includes Buddy Talks, Panel discussions
- Organized reunions of Alumni (decennial, silver & golden jubilee)

Plancess *Mumbai, India*

Internship - Start-up

- Guided IIT-JEE aspirants - material preparation and refining; Rank Predictor estimation using their marks, proofreading

Others *IIT Bombay*

- Coordinator E-cell, Operations; Coordinator Mood Indigo'13, Food and Beverages Dept.
- Mentored freshmen for robotics competition, XLR8; Worked for **Insight**, Student Media Body - IIT Bombay
- Attended Science camps in Indian Institutes of Science Education and Research (**IISER**) - Thiruvananthapuram and Indian Institute of Science (**IISc.**) - Bangalore during 2011-2012
- My hobbies include watching movies, playing cricket and solving game puzzles

References

Professor Vivek Shripad Borkar

Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India

Webpage -https://www.ee.iitb.ac.in/web/faculty/homepage/borkar

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