ABHISHEK NIRANJAN | 13CS30003

COMPUTER SCIENCE & ENGG. (M.Tech Dual 5Y)
MICRO SPL. in ENTREPRENEURSHIP AND INNOVATION

EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2018	M.TECH Dual Degree 5Y	IIT Kharagpur	7.70 / 10
2012	AISSCE	CBSE	93.6%
2010	AISSE	CBSE	9.8 / 10

INTERNSHIPS

Data Science Intern | Amplus Solar | May '17 - Jul '17

- Devised a novel way of computing **soiling rate** in Photovoltaic plants experiencing similar climatic conditions from limited data. Authored the **research abstract** for submission in leading conference on renewable energy for publication.
- Engineered a **forecasting module** to predict hourly active power generation by a PV plant using **gradient boosted trees**, achieving a **correlation of 0.97**. Enhanced the feature set by utilizing **OpenWeatherMap API.**
- Automated the generation of daily visualization reports of PV Plants portfolio in **Power BI** by connecting MySQL server hosted on **AWS EC2 instance**.
- Built a **GUI application** using **PyQt4** to facilitate the data downloading from multiple PV plants' dashboards.

Data Science Intern | Bidgely Technologies | May '16 - Jul '16

- Studied the **low-resolution** electrical energy consumption data of US consumers to analyse the pattern in vacation periods.
- Devised a sliding window algorithm to **predict the vacation instances** of the residents using MATLAB with **precision >95% and recall >70%,** which got incorporated into production.
- Worked on the **energy disaggregation module** to **compute refrigerator consumption** from low resolution, raw electrical energy consumption, data which was pushed to disaggregation pipeline.
- Received deep appreciation from the CTO for the projects carried out and got recommended for **PPO** by Head, Data Scientist.

Back-end Developer | Outsy | May '15 - Jul '15

- Developed a polling feature for real-time meetings in **Django Web Framework** which was incorporated in the android app.
- Extracted artists' names from 15,000 Facebook textual posts using **Stanford POSTagger** after **NLTK** assisted pre-processing.
- Generated **Artists database** by drawing out information using **Wikipedia API, Youtube API, and SoundCloud API**.

PUBLICATIONS

Joint Conference on Digital Libraries | Toronto, Canada | Jun '17

- Citation sentence reuse behavior of scientists: A case study on massive bibliographic text dataset of computer science

PROJECTS

Copying Citation Contexts : Natural Language Processing | IIT Kharagpur | Aug '16 - Jan '17

- Analyzed a massive dataset comprising of nearly 1.5 million computer science articles and more than 26 million citation contexts to understand the behavior of "Copying Citation Contexts" amongst the researchers.
- Conducted experiments involving cosine similarity measure to reveal the copying pattern in 24 fields of computer science.
- Examined the variation, of copying phenomena in the most cited research papers, in subsequent 5 years of their publication.
- ***Research Paper accepted in Joint Conference on Digital Libraries(JCDL), 2017***

Extracting Key-phrases and Relations from Scientific Publications : Natural Language Processing | IIT Kharagpur | Jan '17 - Present

- Extracted key-phrases and relations from citation-contexts from research articles on Computational Linguistics field as Bachelor's and Master's Thesis Project.
- Clustered the research papers based on pre-defined groups such as research task addressed, approach of the solution, etc. by utilising supervised learning with **tf-idf vectors** of citation context as features.
- Built a citation network using **NetworkX and Graphviz packages** to study temporal variation and emergence of different applications and techniques in the field of Computational Linguistics.

Competitive Strength Prediction of ATM Vendors in California : Data Analytics | IIT Kharagpur | Jan '17 - Mar '17

- Assessed the competitive strength of 3 major ATM vendors using spatial ATM network and the demographics of California.
- Visualized feature importance using **Tableau** and clustered the ATM locations by utilizing **k-means approach**.
- Reverse engineered the **feature weights** by applying **Random Forest Classifier** on the clustered data for each county.
- Built a **county specific linear regressor** to model the revenue of each ATM. Enhanced the whole California state linear model by adding county-specific linear model to estimate the annual revenue generation of each ATM location.

Sign Language Translation Through Sensory Gloves : Machine Learning | IIT Kharagpur | Aug '16 - Nov '16

- Worked in a team to translate American sign language gestures to text using flex sensing gloves with positional sensors.
- Compared different classifiers on input data from sensory gloves to train the alpha-numerical character recognition algorithm.
- Built a statistical language model based on stochastic grammar to recognise meaningful words from a stream of characters.

Topic Drift in Comments Section of Articles : Natural Language Processing | IIT Kharagpur | Jan '16 - Apr '16

- Studied the phenomena of Topic Drifting in the comments section of an online article by identifying the comment which deviates - from the topics touched by the article or discussion in the prior comments.
- Applied LDA (Latent Dirichlet Allocation) Model to generate the topics associated with the content of the article. Thereby, tagging article sentences to the corresponding topic.
- Employed cosine similarity metric to map comments to the topics generated from the article to filter out the true negatives.

Data Extractor from 2D Plots : Software Development | IIT Kharagpur | Mar '16 - Apr '16
- Worked in a team of 15 members in Inter-Hall Software Development Competition to build a graph extractor that detects plots in any PDF and digitizes the graphs.
- Built a module which digitizes the plot lines using the pixel values from the graphical(BW) image by aptly scaling them to the given range of the axes imported from the OCR module using Python Imaging Library.

SKILLS AND EXPERTISE

Programming Languages: C++, Python, C, SQL
Libraries and Frameworks: Scikit-Learn, TensorFlow, Keras, Natural Language Toolkit, OpenCV, Django
Software: MATLAB, Tableau, Power BI, Eclipse, PyCharm
Tools: Amazon Web Services, Git
Documentation: LaTeX, UML Diagrammer

POSITIONS OF RESPONSIBILITY

Teaching Asssitant | Programming and Data Structures Course | IIT Kharagpur | Aug '17 - Present
- Tutored the 1st year students on the basics of Programming and Data Structures on a weekly basis at IIT Kharagpur.
- Co-authored the tutorial and assignments sheets for the students on the basic concepts of Programming and Data Structures.

General Secretary | Code Club | IIT Kharagpur | Aug '15 - Jul '16
- Spearheaded the development of tutorials on various fields of Computer Science to help student community in the institute.
- Conducted regular workshops to familiarise the members with Competitive Coding and Application Development.
- Collaborated with Investment Organisations to organise five coding events which saw significant number of participants.

Captain | Data Analytics Team | LBS Hall | IIT Kharagpur | Aug '16 - Jul '17
- Led a team of 15 members in the inter-hall data analytics events carried out throughout the academic year.
- Conducted tutorial sessions on **machine learning using python** to help members develop deep understanding in the field.

AWARDS AND ACHIEVEMENTS

Joint Entrance Examination - Advanced | 2013
- Stood amongst top 1% in JEE-Advanced 2013 and thereby got shortlisted for admission in Indian Institute of Science, Bangalore, the finest institution in the field of Science in India.

Joint Entrance Examination - Mains | 2013
- Secured an All India Rank of 2501 amongst 1,100,000 in JEE Mains 2013.

COURSEWORK INFORMATION

Probability and Statistics, Algorithms and Data Structures, Discrete Structures, Machine Learning, Deep Learning, Natural Language Processing, Introduction to Cognititve Information Processing, Database Management Systems