

Sahil Bansal

FINAL YEAR UNDERGRADUATE · COMPUTER SCIENCE AND ENGINEERING

Indian Institute of Technology Kanpur

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Education

Indian Institute of Technology Kanpur

Kanpur, India

BACHELOR OF TECHNOLOGY, MAJOR IN COMPUTER SCIENCE AND ENGINEERING

2015 - 2019

- Cumulative Performance Index / **CGPA: 9.02 / 10.0**

AGGARSAIN PUBLIC SCHOOL, KURUKSHETRA

Kurukshetra, India

CLASS XII, ALL INDIA SENIOR SCHOOL CERTIFICATE EXAMINATION (AISSCE)

2015

- Aggregate: **95%**

AGGARSAIN PUBLIC SCHOOL, KURUKSHETRA

Kurukshetra, India

CLASS X, CBSE BOARD CERTIFICATION EXAMINATION

2013

- Cumulative Performance Index / **CGPA: 10.0 / 10.0**

Awards & Achievements

2017 **Academic Excellence Award**, IIT Kanpur

Kanpur, India

2015 **All India Rank 571**, Joint Entrance Exam Advanced, among 1,50,000 candidates

India

2015 **All India Rank 1764**, Joint Entrance Exam Mains, among 15,00,000 candidates

India

2015 **Signed Letter of Appreciation**, By erstwhile HRD Minister for Class XII CBSE Result

Kurukshetra, India

2015 **Manmohan Singhal Memorial Award**, Awarded for being **Best All Rounder**

Kurukshetra, India

2014 **International Rank 65 | State Rank 2**, International Mathematics Olympiad

Kurukshetra, India

2014 **International Rank 221 | State Rank 13**, National Science Olympiad

Kurukshetra, India

2014 **State Rank 4 | Zonal Rank 1**, State Level Science Quiz Contest

Sonapat, India

Work Experience

Semantic Matching (Meaning Learning)

Bangalore, India

RESEARCH INTERN, BIG DATA EXPERIENCE LAB, ADOBE RESEARCH

May. 2018 - July. 2018

- The project aimed at looking for different ways of assisting users of search systems in **constructing queries that are richer and more likely to retrieve the desired results**
- The research problem that was the focus of the internship was to **use historical data** (previous queries provided by users, the results that were returned, meta data about them, as well as interactions of the users with these results) to build machine learnt models that **generate reformulation suggestions**
- The solution built on published baseline models and research in these areas, requiring familiarity with current state-of-the-art literature in related areas like **NLP**
- Most of the experimentation was done via toolkits available in **Python, TensorFlow and PyTorch**

Adaptive Frequency Estimation Using Iterative DESA with RDFT Based Filter

Bangalore, India

RESEARCH INTERN, INDIAN INSTITUTE OF SCIENCE, PROF. CHANDRA SEKHAR SEELAMANTULA

May. 2017 - July. 2017

- Combined **Discrete Energy Separation Algorithm (DESA-1)** and **Recursive Discrete Fourier Transform (RDFT)**-Based Filter to design a new technique for Grid Voltage Frequency Estimation
- Proposed technique is computationally efficient and robust to negative effects caused by noise & harmonics
- Learnt about **DFT, FFT, DESA-1, DESA-1a, DESA-2**, Teager Energy Operator (**TEO**) and many other techniques involved in Instantaneous Frequency Estimation

Publications

Adaptive Frequency Estimation Using Iterative DESA with RDFT Based Filter

PAPER LINK

UNDER GUIDANCE OF PROF. CHANDRA SEKHAR SEELAMANTULA

APPEEC17

- Paper proposes a new approach for estimating fundamental frequency of grid signals
- Based on a discrete energy separation algorithm (**DESA**) combined with an adaptive bandpass filter (**BPF**)
- Paper published in **IEEE PES Asia-Pacific Power and Energy Engineering Conference, 2017**

Projects

Document Similarity using Lexical Chains

IIT Kanpur

COURSE PROJECT, PROF. ARNAB BHATTACHARYA

Jan. 2018 - April. 2018

- The project aimed at understanding the **meaning of a document** in a better manner in order to improve the accuracy of models used for computing the similarities among documents
- Using semantic information extracted from ontology such as **WordNet** could help in understanding the meaning in a better manner
- Attempt towards integrating WordNet with lexical chains to alleviate common challenges, such as **synonymy and polysemy** and that of extracting core semantics from texts

Cycle Renting Web Application

IIT Kanpur

COURSE PROJECT, PROF. MEDHA ATRE

Jan. 2018 - April. 2018

- Developed a cycle renting web application based on **Django**
- Application users could send requests to other users, would get a notification about the status of their request, register their own cycles on the platform and rent them to other users

Biodegradable Systematic Manure Machine

IIT Kanpur

MANUFACTURING PROCESSES TA202A PROJECT, PROF. SOUNAK K. CHOUDHARY

Jan. 2017 - April. 2017

- Built a Biodegradable Systematic Manure Machine using Manufacturing Processes such as **Drilling, Turning, Milling** etc.
- Aim of Machine is to reduce the biodegradable waste into smallest size possible
- Worked in a team of 8 members and a guide

Beverage Can Vending Machine

IIT Kanpur

MANUFACTURING PROCESSES TA201A PROJECT, PROF. RAJIV SHEKHAR

Aug. 2016 - Nov. 2016

- Built a Beverage Can Vending Machine using Manufacturing Processes such as **Welding, Brazing, Casting, Sheet Metal Working** etc.
- Aim of Machine is to dispense beverages to customers automatically, after the customer inserts currency or credit into the machine
- Worked in a team of 4 members, **1st team to attempt this project since years**

Technical Skills

Programming C/C++, Python, MATLAB/Octave, MIPS, Verilog, R

Utilities Tensorflow, PyTorch, Bash, Git, \LaTeX

Web Django, HTML, SQL

Relevant Coursework

Information Retrieval
Machine Learning Techniques**
Computer Organization
Discrete Mathematics
Multivariable Calculus
Psychology of Adjustment
Introduction to Electronics

Principles of Database Systems
Operating Systems**
Theory of Computation**
Intro to Mathematical Logic
Social Psychology**
Complex Analysis
Microelectronics

Data Structures & Advanced Algos**
Probability and Statistics (**A***)
Abstract Algebra
Control System Analysis
Microeconomics
Linear Algebra & PDE's
Signals, Systems and Networks

A*: Grade for exceptional performance

******: Ongoing Courses

Extracurricular Activities

2017 **Senior Executive**, Public Relations, Antaragni'17

IIT Kanpur

2015 **Junior Executive**, Media & Publicity, Antaragni'15

IIT Kanpur

2015 **Electromania**, Made an egg-basket game using basic Digital IC's and logic gates

IIT Kanpur