SPANDAN SENAPATI

Junior Year Undergraduate
Computer Science and Engineering

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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2018 - Present	B.Tech in Computer Science and Engineering	Indian Institute of Technology, Kanpur	**9.32/10**
2018	Class XII (CBSE)	DAV Public School, Chandrasekharpur(BBSR)	95.4%
2016	Class X (CBSE)	DAV Public School, Chandrasekharpur(BBSR)	10/10

Academic Achievements

- Secured **All India Rank 161** in **JEE Mains** 2018 among 1.5 million candidates
- Secured **All India Rank 191** in **JEE Advanced** 2018 among 150,000 shortlisted candidates
- Selected for **KVPY** 2016 fellowship, securing **AIR 24** among 50,000 candidates conducted by IISc Bangalore
- Awarded **National Talent Search Scholarship** 2016 by NCERT (National Council of Educational Research and Training)
- Awarded **Academic Excellence Award** for the years 2018-19, 2019-20 by IIT Kanpur for excellent academic performance
- Among the **National top-35** selected for the **OCSC** of **IJSO** 2016 (Bali, Indonesia) out of about 45,000 candidates
- Qualified for **INMO** in 2016 & 2017, **INPHO** and **INAO** in 2017 & 2018 and **INCHO** in 2018 conducted by HBCSE, Mumbai
- **National Top 1%** in **NSEP** 2017 organised by Indian Association of Physics Teachers (IAPT) among 45,000 candidates

Projects

- **Bayesian Tensor Completion for Traffic Estimation** *Aug'19 - Nov'19*
  Supervisor: Prof. Ketan Rajawat
  - Worked on **Streaming Tensor Factorisation** and **Bayesian Subspace Filtering** using Mean Field Variational Inference
  - Extended the idea to Traffic estimation on a dynamic setting giving the flexibility to handle multiple relationships in dataset
  - Derived theoretical results on the proposed algorithm and studied techniques (LDL Decomp) to improve the time complexity
- **Robust Principal Component Analysis(Course Project)** *Jan'20 - Apr'20*
  Supervisor: Prof. Ketan Rajawat
  - Studied and worked on efficient algorithms for **RPCA** and **Convex Optimisation** in **Linear programming problems**
  - Proposed modifications as stimulations involving **randomized estimators** to handle the computational efficiencies
  - Carried experiments to compare performances of **Proximal Gradient Algorithms** with existing optimisers in **Pytorch**
- **Probabilistic Machine Learning** *May'19 - July'19*
  Programming Club, IIT Kanpur
  - Implemented a **Numpy** based model for density estimation using **Gaussian Mixture model** on **MNIST** dataset
  - Explored advances in **Variational Inference** such as **Stochastic VI, BBVI, Variational Autoencoders (VAE)**
  - Explored advances in MCMC methods such as **Hamiltonian MCMC (HMC), Langevin Dynamics** etc

Programming Experience

- **Algorithms in Depth** *May'19 - July'19*
  Programming Club, IIT Kanpur
  - Studied various graph algorithms such as Dijkstra, Bellman Ford, Kruskal's and Prim, Disjoint Set Union (DSU) etc
  - Studied and implemented various advanced data structures such as Segment Trees, Fenwick Trees etc
- Among top **1%** Indians on **Codechef** with a **5*** rating of **2022** and an active participation in contests

Technical Skills

Programming	Familiar	Machine Learning	DL Frameworks	Utilities
C, C++, Python	Verilog, SQLite	Numpy, Pandas, Scipy, Gensim	Pytorch	Git, LaTeX, Shell

Relevant Coursework

Convex Optimisation
Data Structures and Algorithms
Real Analysis and Calculus
Computer Organisation
Discrete Mathematics
Software Development
Fundamentals of Computing
Logic in Computer Science
Linear Algebra & ODE's

Positions of Responsibility

- **Student Guide - Counselling Service, IIT Kanpur** *July'19 - Present*
  - Responsible for the guidance and mentorship at a personal level of 5 freshman undergraduates and for the smooth conduction of various events in the Orientation Session for the incoming Batch of Y19

Extracurricular Activities

- **Mentor - Association for Computing Activities (ACA), IIT Kanpur** *Jan'20 - Mar'20*
  - Mentored a group of 10 students on Probabilistic Machine Learning (PML) by introducing them to the field
  - Organised lectures and prepared monthly theoretical and programming assignments to check their progress