

SARTHAK ROUT

Second Year Undergraduate
Department of CSE, IITK



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EDUCATION

Year	Degree/Exam	Institute	CPI/%
2019 - Present	B.Tech (Computer Science and Engineering)	Indian Institute of Technology, Kanpur	9.5/10
2019	CBSE (Class XII)	Sir Padampat Singhanian Public School, Kota	95.2/100
2017	CBSE (Class X)	DAV Public School, CSpur, Bhubaneswar	10/10

SCHOLASTIC ACHIEVEMENTS

- Recipient of Academic Excellence Award from IIT Kanpur. 2019
- Secured All India Rank 202 in JEE (Advanced) among over 0.2 million students. 2019
- Secured All India Rank 207 in JEE (Main) among over 1.3 million students. 2019
- Qualified for OCSC of IJSO and IAO 2016, IOAA 2017, IOAA 2018, IChO and IOAA 2019 at HBCSE.
- Selected for Kishore Vaigyanik Proasthan Yojana (SA) fellowship with AIR 42, IISc Bengaluru 2018
- Recipient of National Talent Search Scholarship, NCERT from MHRD, Gov. of India. 2017


EXPERIENCE

- **Probabilistic Machine Learning and Deep Learning** - </> (Jan '21 - Mar '21)
 - Implemented a 2-layered neural network and softmax regression from scratch on MNIST dataset with test case accuracy of 0.9683 and 0.924 respectively.
 - Explored Neural Networks, EM Algorithm, SVM, K-Means Clustering, Naive Bayes, PCA etc.
 - Examined CNNs, GANs and implemented a CNN on MNIST in PyTorch with accuracy 0.9913.
- **Private Computation using Cryptographic Primitives** - </> (May '20 - Jul '20)
By SnT Club | Mentor: Aditya Gulati | IITK
 - Examined Function Secret Sharing, Fully Homomorphic Encryption and Yao's Garbled Circuits.
 - Implemented a faster and safer distributed point function library in Rust using multi threading and memory optimisation in a team.
 - Used GRPC, gTest and Google Benchmark and for testing, networking and benchmarking.
- **InfoSec IITK** (Feb '20 - Apr '20)
By ACA | Mentors: Priydarshi Singh, Varun Goyal
 - Examined SQL, XSS and XXE injection along with Reverse Engineering and Steganography.
 - Explored privilege escalation using Burp Suite, Metasploit, Nmap and participated in CTFs .
 - Devised an exploit to expose critical vulnerability in OARS, IITK which exposes databases storing grades.
- **gradeLess - Course Project ESC101** - </> (Aug '19 - Nov '19)
with N Gupta under Dr. Piyush Rai, IITK
 - Evaluated True/False and MCQs in feature based aligned images of printed answer sheets.
 - Integrated an autograder full-stack webapp with pretrained model for character recognition.
 - Implemented the frontend in Angular with backend in Express and used OpenCV for image processing.



TECHNICAL SKILLS

- **Programming Languages:** C, C++, Python, TypeScript, Matlab/Octave, Verilog, Bash
- **Frameworks:** Angular, Express
- **Libraries :** NumPy, Pandas, PyTorch, SciKit-Learn, OpenCV, Selenium, RxJs
- **Tools :** Git, LaTeX, Metasploit




RELEVANT COURSES

Fundamentals of Computing*	Real Analysis and Calculus*	Linear Algebra and ODE
Data Structures and Algorithms	Numerical Analysis*	Number Theory
Introduction to Electronics	Computer Organisation(o)	Software Development and Operations(o)
Modern Cryptology(o)	Quantum Computing(o)	Neural Networks and Deep Learning(C) 
(* $\equiv A^*$ grade, o \equiv Ongoing, C \equiv Coursera)		

HACKATHON

- **HCL HackIIITK Hackathon** -   Aug '20
with A Kalyani and DB Mansoor in a team
 - Analysed data in PE format and API trace reports and created a malware detection tool using Logistic Regression with a F1 score of 0.9984.
 - Implemented a model to detect botnets by network traffic analysis of packets with F1 score of 0.9474.
 - Bagged **16th** position of merit in the final round out of more than 3000 teams globally.

POSITIONS OF RESPONSIBILITY AND EXTRACURRICULARS

- Secretary, Programming Club
- Secretary, Entrepreneurship Cell (Startup Internship Program)
- Bagged **2nd** position out of 250+ teams in Mathmania-2020, a competition based on math puzzles -  [Results](#)
- Competitive Programming:  [Codechef](#) - 5*
- Global Rank 1001 in Google HashCode 2021 out of 9004 teams - 
- Mentored JEE Aspirants on Mathematics during the pandemic for a startup—Edvizo