

ABHAY MISHRA

Third Year Undergraduate
Department of Computer Science and Engineering

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ACADEMIC QUALIFICATIONS

Year	Degree/Certificate	Institute	CPI/%
2019 - Present	Bachelor of Technology	Indian Institute of Technology, Kanpur	8.32/10
2019	CBSE(XII)	JNV Bundi, Rajasthan	97 %
2017	CBSE(X)	JNV Sidhi, Madhya Pradesh	10/10

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 387** in **JEE Advanced 2019** out of 245,000 candidates
- Secured **All India Rank 893** in **JEE Mains 2019** out of 1.3 million candidates
- Secured **All India Rank 531** in **KVPY 2018** conducted by IISc and Gov of India

KEY PROJECTS

- Building gemOS Operating System** Aug'21-Nov'21
Mentor: Prof. Debadatta Mishra | CSE IIT Kanpur | Course Project | Operating Systems
 - Created basic **pipe** and **persistent pipe** with related system calls like read, write, fork and flush
 - Designed a simple **debugger** that allows getting breakpoint information and supports **backtracing** functionality
 - Built thread library with support for **thread private memory** along with thread creation, join and wait functionality
 - Implemented system calls such as **page fault handler** for thread private memory using **4-level page table walk**
- Implementation of HPSSA Construction Algorithm in LLVM Compiler Framework** May'21- Ongoing
Mentor: Prof. Subhajit Roy | CSE IIT Kanpur | Undergraduate Project
 - HPSSA form weaves **static program code** and **run-time profile information** in a single data structure
 - Implemented HPSSA construction algorithm as a compiler pass in **LLVM compiler framework**
 - Used suitable CFG traversal routines and data structures for optimizing **memory usage** and time taken
 - Built custom **acyclic path profiler** for testing correctness of implementation on small programs
- IITK Coin** May'21-Jul'21
Programming Club | IIT Kanpur
 - Used **Go** and SQLite to implement the **back-end** of a **centralized pseudo-coin system** for use in the IIT Kanpur
 - Stored passwords using hashing and salting and used JSON web tokens (**JWT**) for authentication purposes.
 - Designed and implemented fast endpoints for awarding and transfer of coins adhering to official guidelines
 - Tested the implementation at each stage using **cURL** and **Postman**
- Introduction to Artificial Neural Networks** May'20- Jul'20
Programming Club | IIT Kanpur
 - Trained and optimized different CNN Models like **LeNet** on MNIST and CIFAR-10, achieving max acc. of **97%**
 - Learned about transposed convolutions, **autoencoders** and used them for denoising images
 - Obtained word embedding using **word2vec** algorithm based on the skip-gram architecture
 - Developed a **Seq2Seq** character level model using TensorFlow for use in natural language processing
- Networking** Jan'20- Feb'20
Association of Computing Activities | IIT Kanpur
 - Implemented a brute force password cracker using Linux shell utilities and **bash scripting**
 - Studied various **network protocols** and setup of virtual local area network
 - Learned about network address translation, proxy setup, and cisco router configuration

TECHNICAL SKILLS

- Proficient:** C/C++, Python
- Utilities:** Git, LaTeX, Bash
- Exposure:** Go, Haskell, TensorFlow, SQLite, Verilog, LLVM
- Machine Learning:** PyTorch, Numpy, Pandas, Matplotlib

RELEVANT COURSES

Operating Systems
Data Structures and Algorithms
Computer Organization
Fundamentals of Computing
Probability in Computer Science
Logic in Computer Science

Theory of Computation
Software Development and Operations
Principle of programming languages
Discrete Mathematics
Linear algebra and ODEs
Real Analysis

POSITIONS OF RESPONSIBILITY

- **Project Mentor | Deep Into CNN**

May'21-Jul'21

- **Programming Club** | IIT Kanpur

- Introduced Convolutional Neural Networks (**CNN**) and optimization methods to **22** students
- Conducted **two** hackathons based on shared material and gave feedback on more than **20** code submissions
- Helped mentees in implementing models such as **AlexNet, VGG, ResNet, Inception, Xception** using PyTorch

- **Student Guide**

2020-21

- **Counselling Service** | IIT Kanpur

- Guided and mentored **five freshmen** and helped them in getting accustomed to the new environment
- Helped them with their academics by arranging meetings with their mentors

EXTRA-CURRICULAR ACTIVITIES

- Participated in parades and other activities throughout the year as an NCC Cadet
- Global Rank 1218 in Google Kickstart Round F among more than 5k participants
- Participated in Codeforces contests (Max Rating: 1536, Specialist)

2019-20

Sep'20