

# ABHAY MISHRA

Third Year Undergraduate  
Department of Computer Science and Engineering

+91-7879056682  
mabhay@iitk.ac.in

## 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**

## 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
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## 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