Somu **Prajapati**

SOPHOMORE UNDERGRADUATE · COMPUTER SCIENCE AND ENGINEERING

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"Either winning or learning, losing was never an option."

Education

Indian Institute of Technology, Kanpur *Kanpur, India*

BACHELOR OF TECHNOLOGY, MAJOR IN COMPUTER SCIENCE AND ENGINEERING *Jul. 2018 - Exp. Apr. 2022*

• Cumulative Grade Point/CGPA: 7.7 out of Max 10.0

Prince Academy *Sikar Rajasthan*

CENTRAL BOARD OF SECONDARY EDUCATION, CLASS 12TH *Jul. 2016 - Jul. 2017*

• Percentage 91.4%

Kendriya Vidyalaya Leh-Ladakh *Leh, Ladakh*

CENTRAL BOARD OF SECONDARY EDUCATION, CLASS 10TH *Jul. 2014 - Apr. 2015*

• CGPA 10/10

Honors & Awards

2018	**All India Rank 949**, Joint Entrance Examination Advance, 200,000 candidates	*India*
2018	**All India Rank 3796**, Joint Entrance Examination Mains, **1.5 million candidates**	*India*
2019	**Silver medalist**, Dev Hackathon, Inter IIT Tech Meet	*Roorkee, India*

Publications

CoDS-COMAD 7th ACM IKDD CoDS, and 25th COMAD *Hyderabad, India*

DEMO TRACK PAPER *Jan 5-7, 2020*

• Demonstrated a tool **Swagrader**, which Handles Grading for MOOCs with customizable and structured workflow.
• Introduces a new and smart way to peer-grade using mechanism design and game theory called *TRUPEQA* which incentivizes graders to grade with honest effort.
• Containerized with dockers to ensure high scalability and low maintenance. Threading used for horizontal scaling of the tool.
• Achieved **better** results on the simulations as compared to typical peer-grading patterns, which are being used by Coursera and edx.

Projects and Experience

Swagrader: Honest Effort Extracting, Modular Peer-Grading Tool *IIT Kanpur, India*

PROJECT UNDER PROF. SWAPRAVA NATH *May 2019-present*

• Built a customizable and game theoritically powered tool **from scratch** which handles peer grading and normal grading workflows for massive open online courses.
• The core of the tool is powered by **TRUPEQA** (TRUthful Peer Evaluation with Quality Assurance), which is a mechanism devised to extract honest effort grading from the strategic peers. By its properties viz. *EBPI* and *EPRM* the algorithm has a stronger version of similar definition of **dominant strategies**.
• Contributed a more robust distribution alogrithm which essentially is the **graph connectivity** problem.
• Worked with extensive data management and design patterns to handle big data for the students and handle accordingly.
• Used **cryptographic signing** for anonymous peergrading.
• A demonstration of the tool was presented in *CoDS-COMAD*. The paper on the tool is **one of the 6** accepted papers in the conference.
• The tool will come live next summers **campus wide** for beta testing.

SRLMS: Smart Road Lease and Management System

IIT Roorkee, India

1ST RUNNER-UP, DEV-HACKATHON, INTER-IIT TECHMEET

December 2019

- Developed an app based on Restful API backend called SRLMS (smart road lease and maintenance system), which can be used effectively by the government, contractors, and citizens to improve the condition of roads.
- The principle underlying is **crowdsourcing**. The Modular reward system was based on game theoritic arguments, to ensure quality of data reddit based voting system was implemented. Location based APIs were used to filter the complaints for one municipal office, moreover, real time location features and acceleratometer features were used for more robust reward system called as **Run and Earn**.
- The frontend was developed with React Native (app) and Django templates (web app). Server-side based on Django Rest Framework, exposing tens of APIs for any modular frontend.
- Fully **dockerized** backend running on a docker-compose setup. Written with scalability and speed in mind.
- **Judged 2nd** among all IITs participating in the competition.

Saarthi: Smart Road Maintenance system

IIT Kanpur, India

SUMMER OF CODE, IIT KANPUR

May-Jun 2019

- Developed an app based on Restful API backend called Saarthi, which can be used by the government and citizens to maintain roads.
- Crowdsourcing was the idea for the project. **Location based tagging** and implementing crpytographic system in backend was used.
- The frontend was developed with **Flutter** (app) and Django templates (web app). Server-side based on **Django Rest Framework**, exposing tens of APIs for any modular frontend.

LWCPM: Light Wieght and Custom Package Manager

IIT Kanpur, India

ASSOCIATION OF COMPUTER ACTIVITIES, DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, IIT KANPUR

Jan 2019 - Mar 2019

- Developed a Python based package manager that installs custom packages and dependencies from linux source repositories.
- To validate the package, **RSA signatures** were used in packages.
- Implemented **graph algorithms** to tackle package dependencies and circular dependencies.
- Implemented **threads** and **file locks** to speed up the installation and dependency list making process.

Skills

Programming	C, C++, Python
Familiar	JavaScript, TypeScript, Bash
Web	Django, Angular8, HTML5, CSS, PostgreSQL
Android	Flutter
Utilities	Git, Dockers, LaTeX

Coursework

- **Completed:** Under Graduate Project (UGP) **A***, Data Structures and Algorithms, Mathematics for Computer science-I, Fundamentals of Programming, Linear Algebra and Differential Equations, Multivariable Calculus.

- **Ongoing:** Software development and operations, System Organisation, Mathematics For Computer Science - II, Introduction to Economics.

- **Online Audited courses:** Game theory and mechanism design (Coursera), machine learning A-Z (Udemy).

Positions of Responsibility

Programming Club, IIT Kanpur

IIT Kanpur

SECRETARY

Apr 2019-present

- Responsible for hosting institute-wide lectures on various programming topics, organize hackathons and offer projects.
- Contributor to open-source projects, used by campus community of approx 6,000 people.
- Responsible for spreading awareness and motivating students of the campus towards programming.

Students' Placement Office, IIT Kanpur

IIT Kanpur

COMPANY COORDINATOR

Aug. 2019-present

- Coordinating with 100s of companies for the placement of about 1000 graduating students in the Placement drive 2019.
- Organising talks and sessions for internships and placement for pre-final year students.

Association of Computer Activities, CSE, IIT Kanpur

IIT Kanpur

SECRETARY

Aug 2019-present

- Responsible for hosting department lectures on various programming topics, organize hackathons, CTFs and offer projects.
- Planning of departmental trips and other fun activities.

Antaragni, IIT Kanpur

IIT Kanpur

WEB MANAGER

Mar. 2019 - Oct. 2019

- Responsible for developing and managing Antaragni's website and mobile app.

- Mentoring freshers for an overall academic and emotional support for generating inclusiveness.

Counselling Services IIT Kanpur   *IIT Kanpur*

Student Guide   *Jul. 2019-present*

- Mentoring freshers for an overall academic and emotional support for generating inclusiveness.