

PRIYDARSHI SINGH

THIRD YEAR UNDERGRADUATE · AEROSPACE ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY, KANPUR

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EDUCATION

Year	Degree	Institution	Score	Honours
2018 – 2022 (Expected)	B.Tech, AE	Indian Institute of Technology, Kanpur	9.05/10.0	Academic Excellence Award 2018, 2019
2018	ISC – XII	St. Joseph's College, Prayagraj (CISCE)	98.25%	Prayagraj District Topper
2016	ICSE – X	St. Joseph's College, Prayagraj (CISCE)	97.8%	Prayagraj District Topper

WORK EXPERIENCE

Google Summer Of Code

STUDENT DEVELOPER, WITH OPEN PRINTING, UNDER THE LINUX FOUNDATION

May 2020 - Present

- Working on Qt Print Support to integrate the features of **Common Print Dialog Backends (CPDB)** in Qt.
- Ensured **abstraction** by implementing new code for the existing headers of Qt and respecting the established API.
- Added an entirely new functionality into the humongous code base while maintaining **binary compatibility**.
- Also fixed bugs in other printing libraries like the CUPS backend and system-config-printer.

National Interdisciplinary Center for Cyber Security and Cyber Defense of Critical Infrastructures

STUDENT RESEARCH ASSOCIATE, UNDER PROF. SANDEEP K. SHUKLA

December 2019 - Present

- Building a tool to assess and demonstrate the interaction of attackers with a **honeypot** network.
- Working on the automation of the orchestration of the **Kubernetes** cluster employed for keeping the attackers engaged.
- Responsible for deploying new pods **in real time** as per the attack vector obtained by analysing the received payloads.
- Also involved in Vulnerability Assessment and Penetration Testing (**VAPT**) activities for finding new **CVEs**.
- Member of the organizing team of the **ScadaCTF** (a CTF on Industrial Control Systems) at Nullcon 2020 in Goa.

New York Office, IIT Kanpur

BACKEND DEVELOPER (SUMMER INTERN), UNDER PROF. MANINDRA AGRAWAL

June 2019 - August 2019

- Worked on a scalable web application for a social network, involving a highly extensive technology stack.
- Built an independently-running URL shortening **microservice** that communicates with the main application using **gRPC**.
- Ideated and developed an entire scalable private messaging feature that uses **ScyllaDB** for quick storage of messages.
- Also created REST APIs on the **gorilla/mux** framework to perform CRUD operations on a **cockroach** database.
- Worked on a customized deployment pipeline, using arcanist and **Phabricator** for code-review.

New Office Automation, DOIP

STUDENT RESEARCH ASSOCIATE, UNDER PROF. ARNAB BHATTACHARYA

December 2018

- Found major **security flaws** in Pingala (IITK's campus automation portal), and reported them to the relevant authorities.
- Thereafter officially inducted into the project, and performed a **vulnerability assessment** of Pingala.
- Discovered multiple ways to gain unauthorized access to data, and suggested effective ways to fix them.
- Also implemented a modified version of the **Gale-Shapley algorithm**, in Java, to solve the problem of efficiently allocating courses to students based on their preferences - by modelling it as a **stable matching problem**.

PROGRAMMING ACHIEVEMENTS

- 5.4K+ reputation on **StackOverflow**, 130K+ people reached ~6 years
- Regular competitive programmer on **Codeforces** (Max. rating 1849) ~2 years
- Rank 63, **ICPC Asia Kanpur Preliminary Online Contest** 2019
- Rank 118, **ICPC Asia Amritapuri Doublesite Regional Contest** 2019
- Runner Up, **Fresher's Programming Contest** (a competitive programming contest for first year students) 2018
- Second Runner Up, **Blackbox** (an **esolang** programming contest) in Takneek 2018
- Participated in, and found a security flaw that allowed extraction of hidden test cases from **Google foo.bar** 2017
- Among the 126 students across India to have qualified for the **Indian National Olympiad in Informatics** 2017
- Maintain some well appreciated **open source** projects on GitHub.

KEY PROJECTS

IITKBucks

SUMMER PROJECT UNDER PROGRAMMING CLUB

 dryairship/IITKBucks

May 2020 - July 2020

- Mentored a group of 14 students in building their own clients for a custom **blockchain based cryptocurrency**.
- Taught mentees about the basics of blockchains, decentralization, digital signatures, proof-of-work, and related topics.
- Resolved problems in mentees' implementations, which spanned across languages like Java, Javascript and python.
- Developed my own client in **Go**. Also wrote tests using the **go test** module for better code reliability.

Online Election Manager

PROJECT TRACK - ESC101A, UNDER PROF. SWAPRAVA NATH

 dryairship/online-election-manager

February 2019 - April 2019

- Built a **cryptographically secure** online voting system to store three levels of preferences for a voter.
- Implemented secure and **anonymous** vote storage through a triple encryption mechanism using **ElGamal** key pairs.
- The system can **prove** to a voter that their vote was counted correctly, while maintaining their anonymity.
- **Deployed** on **elections.pclub.in**, and used for Students' Senate elections, introducing online voting for the first time.
- Technologies used: **Go, MongoDB, React.js**

Smart Purchase App

CSE@IITK SUMMER OF CODE 2019, AFFILIATED WITH NUTANIX

 dryairship/SRATRC-Smart-Purchase-Web-App

May 2019 - July 2019

- Led a team of 5 students in building a **MERN stack** web app for efficient inventory management.
- Built to be used by the NGO Vitraag Vigyaan for inventory and finance tracking across all their departments.
- Used local storage for **data caching** to reduce network usage, thereby enabling the app to work in rural areas.

QuizKitty

FACEBOOK HACKATHON: MESSAGING

 dryairship/quiz-kitty

May 2020 - June 2020

- Developed a cat-themed **messenger bot** that can act as a quizmaster, using questions from an open source database.
- Integrated with the Messenger platform using a **webhook**, and used **Facebook Graph API** to send messages.
- **Deployed** on Heroku, and available to chat on Facebook Messenger at <https://m.me/quizkitty>.

SKILLS

Programming	Java, Go, Python, C++, Javascript (with exposure to Haskell and Rust)
Web	Express.js and React.js with Node.js, Gin and Gorilla with Go, Django with Python, jQuery
Database Tools	PostgreSQL, MongoDB, ScyllaDB, Redis (with exposure to Prometheus and Grafana)
Miscellaneous	Git, Phabricator, Bash, Docker, Kubernetes, gRPC

RELEVANT COURSES

Fundamentals of Computing (A*)	Introduction to Economics	Linear Algebra & ODEs	Real Analysis
Data Structures and Algorithms	Introduction to Electronics	Language and Society (A*)	Complex Variables

A*: Grade for exceptional performance

POSITIONS OF RESPONSIBILITY

- **Coordinator**, Programming Club, IIT Kanpur March 2020 - Present
Leading a team of 20+ secretaries to manage club projects and activities. Took the initiative of starting a monthly *Sport Programmer of the Month* Challenge to encourage a competitive programming culture in the campus.
- **Project Mentor**, Association of Computing Activities, IIT Kanpur January 2020 - April 2020
Taught the basics of cybersecurity to 14 freshmen. Also participated in multiple online CTFs.
- **Secretary**, Quiz Club, IIT Kanpur March 2019 - March 2020
Conducted the Sci-Tech Quiz and helped organize other quizzes. Represented IITK in various quiz events.

EXTRA CURRICULAR

- Recipient of **The Outstanding Freshman** honour, awarded by the Students' Gymkhana of IIT Kanpur 2019
- Runner Up, **Water Polo** in the 35th Inter IIT Aquatics Meet at IIT Kharagpur 2019
- Second Runner Up, **Sci-Tech Quiz** in the 3rd Inter IIT Cultural Meet at IIT Roorkee 2018
- Runner Up, **inQuizitive** (Science Quiz) in Takneek, conducted by Science Coffee House, IIT Kanpur 2018