

# Ashwin Sekhari

CONTACT INFORMATION	Website: <a href="https://ashsek.me">https://ashsek.me</a> Phone: +91 98181 98151	University e-mail: 117CS0263@nitrrkl.ac.in E-mail: ashwinsekhari@gmail.com
INTERESTS	I am interested in blockchains, network systems, consensus protocols, penetration testing, and sports programming.	( <a href="#">GitHub</a> / <a href="#">CodeChef</a> )
EDUCATION	<b>National Institute of Technology (NIT) Rourkela, India</b> Bachelor of Technology in Computer Science and Engineering (GPA 8.51/10). Achieved Ex (Excellent) grade in 9 courses, awarded to top 10% of the students. <b>Delhi Public School (DPS), Faridabad, Haryana, India</b> AISSE (CBSE Board) - 10th Grade (GPA 10/10) AISSEE (CBSE Board) - 12th Grade (Score 93.8%)	2017-present   2015 2017
RESEARCH EXPERIENCE	<b>Stanford University, USA</b> Worked at <a href="#">Tse labs</a> at Stanford University with Prof. David Tse. <b>University of Waterloo, Canada</b> Worked with <a href="#">Sirius blockchain research group</a> with Prof. Srinivasan Keshav. <b>Indian Institute of Technology, Kanpur (IITK), India</b> Student research associate at <a href="#">Cyber Security Lab</a> , worked with Prof. Sandeep Shukla. <b>National Hydroelectric Power Corporation Ltd., India</b> Gained exposure to their infrastructure, communication and Supervisory Control and Data Acquisition (SCADA) system.	Summer 2020  Summer 2019  Summer 2018  Winter 2017
INVITED PRESENTATIONS	<b>Indian Institute of Technology, Bombay (IITB)</b> Presented a <a href="#">paper</a> at the <a href="#">Third Workshop on Blockchain Technologies and its Applications</a> which was attended by more than 100 participants. ( <a href="#">slides</a> ) <b>Israel Institute for Advanced Studies, Jerusalem (IIAS)</b> Presented a <a href="#">poster</a> at the 3rd advanced school in computer science and engineering: blockchains and cryptocurrencies which was attended by more than 150 participants.	Feb 2019  Dec 2018
PUBLICATIONS	<b>Entangled Blockchains in Land Registry Management</b> with Rishav Chatterjee, Ras Dwivedi, Rohit Negi, Sandeep K. Shukla ( <a href="#">paper</a> ). In Proceedings of the Third Workshop on Blockchain Technologies and its Applications, pp.8-13, Mumbai, February, 2019 . <b>Polaris: A Scalable Geo-distributed BFT Consensus Protocol for Blockchains</b> with L. Yang, Q. Duan, S. Lee, S. Rizvi, S. Keshav, B. Wong, P. Shenoy, W. Golab, S. Gorbunov (working paper).	
RESEARCH PROJECTS	<b>A Secure Scalable Quantum-Safe Blockchain for Critical Infrastructure</b> Supervisor: <a href="#">Prof. Srinivasan Keshav</a> <ul style="list-style-type: none"><li>- Implemented a Byzantine fault-tolerant Global Membership Service (GMS) based on the paper <a href="#">RCanopus</a>. It achieves byzantine fault tolerance by leveraging the features provided by Concord-BFT (VMWare), a generic state machine replication library that can handle malicious (byzantine) replicas.</li><li>- GMS was integrated with RCanopus using Remote Procedure Calls (RPC). During the project, I explored different aspects of networking, consensus algorithms, formal verification methods, post-quantum safety, and energy systems through group meetings, talks, and interactions with professors.</li></ul> <b>Permissioned Blockchains in Land Registry Management</b> Advisors: <a href="#">Ras Dwivedi</a> , <a href="#">Rohit Negi</a> ; Supervisor: <a href="#">Prof. Sandeep K. Shukla</a> (IITK) <ul style="list-style-type: none"><li>- Developed and implemented models to solve the double spending problem in the Indian land registration and maintenance system via blockchains. As a result, achieving significant security and transparency in transactions. This was implemented using "hyperledger-fabric", a permissioned blockchain framework by IBM.</li><li>- Developed an efficient document verification algorithm for verification of land registry documents based on merkle trees. Hence, enabling us to verify documents without its physical availability with the use of tokens.</li></ul>	Summer 19 ( <a href="#">GitHub/Report</a> )          Summer 18 ( <a href="#">Report</a> )

- Explored various aspects of cyber security and computer science through research talks and interactions with PhD students, researchers, and professors.

## COURSE PROJECTS

<b>Energy Efficient Container Consolidation in Cloud Data Centers</b> Supervisor: <a href="#">Prof. B.D.Sahoo</a> (undergraduate dissertation) - Developing new energy efficient container migration algorithms with the goal to reduce the environmental impact of data centers.	Ongoing
<b>Analysis of Routing Protocols for Wireless Ad-hoc Sensor Networks</b> Supervisor: <a href="#">Prof. Arun Kumar</a> (Network Simulation Laboratory, NIT Rourkela) - Simulated and compared AODV, DSDV, and DSR routing protocols using NS-3 simulator and compared on metrics such as routing overhead, average delay, duplication overhead, packet delivery ratio, throughput and data delivery cost.	Fall 2020 ( <a href="#">Report</a> )
<b>Comparison of Face Recognition Algorithms</b> Supervisor: <a href="#">Prof. Anup Nandy</a> (Machine Learning Laboratory, NIT Rourkela) - Analysed and compared face recognition using PCA, LDA and ANN algorithms.	Fall 2020 ( <a href="#">Notebooks</a> )
<b>Implementation of Cryptographic Ciphers</b> Supervisor: <a href="#">Prof. Sujata Mohanty</a> (Cryptography Laboratory, NIT Rourkela) - Implemented Caesar cipher, Vigenere cipher, Playfair cipher, Hill cipher, Rail Fence cipher, One Time Pad (OTP), Keyed Transposition cipher and Feistel cipher.	Fall 2020 ( <a href="#">GitHub</a> )
<b>Road Repair And Tracking System</b> Supervisor: <a href="#">Prof. Judhistir Mahapatro</a> (Software Engineering Laboratory, NIT Rourkela) - Developed Data Flow Diagram (DFD), Software Requirement Specification (SRS), decision trees and decision tables for a Road Repair and Tracking System.	Spring 2019 ( <a href="#">Report</a> )

## SCHOLASTIC ACHIEVEMENTS

- Team ranked among top 90 percentile at Codechef Insomnia	2019
- Ranked 274 in Facebook Hackercup qualification round out of 10,000 participants	2018
- Secured 97 percentile in JEE ADVANCE and 99.7 percentile in JEE MAIN.	2017
- Admitted for undergraduate studies to the computer science department at University College London (UK), University of Edinburgh (UK), and University of Toronto (Canada).	2017
- Achieved All India Rank of 29 in the TECHNOTHOLON (conducted by IIT Guwahati).	2016
- Awarded FreeShip (100% scholarship) at Delhi Public School, Faridabad.	2016
- Received appreciation letter for excellence in CBSE examinations from Mrs. Smriti Zubin Irani (then education minister).	2015

## RELEVANT COURSEWORK

- <a href="#">Scaling Blockchains</a> <sup>†</sup>	<a href="#">Thinking and Data Science</a> *
- <a href="#">Hyperledger Fabric (IBM)</a> *	- Object Oriented System Design
- <a href="#">Bitcoin and Cryptocurrency Technologies</a> *	- Data Communication
- Google Cloud Platform <sup>‡</sup>	- Linear Algebra
- Operating Systems	- Discrete Mathematics
- Distributed Systems	- Probability and Statistics
- Machine Learning	- Data Structure and Algorithms
- Compiler Design	- Computer Organization and Architecture
- Cloud Computing	- Formal Languages and Automata Theory
- Data Science	- Design and Analysis of Algorithms
- <a href="#">Introduction to Computational</a>	- Database Engineering

## SKILLS

**Programming Languages:** Python (2-3), C++, Go, Solidity, JavaScript  
**Blockchains:** Hyperledger Fabric, Truffle, Ganache, web3.js  
**Other tools:** Git,  $\LaTeX$ , Docker, gRPC, MySQL, CouchDB, MongoDB  
**Communication:** English (proficient), Hindi (proficient), Spanish (spoken)

<sup>†</sup> Course taught by Prof. David Tse at Stanford University. I [scribed](#) for some lectures.

\* Online course

<sup>‡</sup> 30 Days of google cloud: completed the cloud engineering track ([skill badges](#))

CONFERENCE  
REFERRING

**Information Theory Workshop-20**

Reviewer for [2020 IEEE Information Theory Workshop \(ITW\)](#), Riva del Garda, Italy.

Nov 20

**IEEE Blockchain 2020**

Meta reviewer for Blockchain Technology and its Potential Applications ([BTPA 2020](#)) workshop organised under 3rd IEEE International Conference on Blockchain, Greece.

Sep 20

OTHER  
PROFESSIONAL  
SERVICE

**Student Mentor (2018-20)**: Responsible for helping about 10 freshmen students in their transition to college, and addressing their academic, mental and socio-cultural issues.

**Google Developer Students Club (2019-20)**: Core Team Member and Blockchain lead of [Google Developer Students Club](#), NIT Rourkela.

**SPAWN (2019)**: Technical head for the official competitive coding club at NIT Rourkela, and was responsible for introducing people to sports programming.

SOCIAL  
SERVICE

**Yog Manav Vikas Trust, Chamba, India (2019)**: Spent 20 days during December 2019 helping at the trust by giving general knowledge about "Basics of Computers" and "Hand on Computers" to underprivileged female trainees pursuing Vocational Training Courses in Certificate in Computer Applications (CCA) through Govt. of India.

**Swachh Bharat Pakhwara Celebrations, Jammu, India (2018)**: Gave a speech on the importance of sanitation as a part of the cleanliness drive in villages of Jammu, India.

**Planatation Drive, NHPC, India (2018)**: Helped in organizing the event. Together we planted more than 2000 saplings in a landslide prone area in north India.

**National Service Scheme (NSS), NIT Rourkela, India (2017)**: Guided about 100 students (along with 3 other group leaders) in completing various social service activities.