

# Deep Inder Mohan

**E-mail:** [deepinder.mohan@iiitb.ac.in](mailto:deepinder.mohan@iiitb.ac.in)

**Contact Number:** (+91)-9877366693

**Github:** <https://github.com/deep-guy>

## Education

### Georgia Institute of Technology

Atlanta, USA

*Ph.D. in Computer Science*

*2022-present*

- School of Cybersecurity and Privacy (SCP)
- Co-advised by Sasha Boldyreva and Joseph Jaeger

### International Institute of Information Technology (IIIT)

Bangalore, India

*Integrated M.Tech. Computer Science and Engineering*

*2017-2022*

- CGPA - 3.71/4.0
- Dean's Merit List for 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22

### Government Model Senior Secondary School, Manimajra

Chandigarh, India

*Senior Secondary School, Central Board of Secondary Education (12th grade)*

*2015 - 2017*

- All-India Examination Marks - 95.2%

### Little Flower Convent School

Panchkula, India

*High School, Indian Certificate of Secondary Education (ICSE)*

*2003 - 2015*

- All-India Examination Marks - 98.4%
- 2<sup>nd</sup> position in Punjab and Haryana state

## Skills

### Programming Languages

- Python, C, C++, Java, MySQL

### Tools and Technologies

- Libraries: OpenNMT, AllenNLP, pandas, scikit-learn
- Vim, Git, L<sup>A</sup>T<sub>E</sub>X

## Major Projects

1. **Secure Identity Verification Using Cloud Services and FHE** (*Master's thesis*): The problem statement is to create a practically deployable identification platform that delegates all computation and storage to third-party nodes. In collaboration with Prof. Srinivas Vivek as a part of the Modular Open Source Identity Platform (MOSIP). Accepted as a talk at the Trustworthy Digital Identity Conference by the Alan Turing Institute, London. A copy of the successfully defended thesis can be found [here](#).
2. **Prejudice Modelling**: Created an agent based model to simulate inter-group prejudice in society, used it to study the changes/disparities that may arise among groups over time. Research conducted in collaboration with Prof. Shrisha Rao. Paper published in the *Journal of Simulation*.

3. **TVLA Methodology:** Created a python implementation of the Test Vector Leakage Assessment methodology to analyse power traces from AES-128 implementations for potential DPA side-channel attacks. Work done under Prof. Srinivas Vivek. See technical report [here](#).
4. **Interview Question Generation:** Follow-up question generation for HR interviews using OpenNMT, BERT, and ConceptNET. Research Internship project under Prof. Dinesh Babu Jayagopi. See technical report [here](#).
5. **Unsupervised Glossary Term Extraction:** A project involving explorations into the existing techniques for extraction of glossary terms and their definitions from a document, and proposing a novel unsupervised method for doing the same. See project report [here](#).
6. **Prolog and AI:** A project involving study of applications of logic programming languages, specifically prolog, into AI and ML. See project report and code [here](#).

## Research Experience

- Successfully defended my master's thesis under the guidance of Prof. Srinivas Vivek. We developed a privacy-preserving national identity platform that can outsource computation to untrusted third-parties using homomorphic encryption, and can hence be deployed at minimal initial cost. This project will be incorporated into the MOSIP platform (*Spring 2022*).
- Completed a semester of research under Prof. Ashish Choudhury studying Verifiable Secret Sharing in Secure Multi Party Computation and exploring the feasibility of Perfectly Secure VSS protocols in hybrid (synchronous and asynchronous) network settings (*Spring 2021*).
- Completed a literature survey on AT-free graphs. Covered various results and theorems on AT-Free graphs and also coloring algorithms for these graphs. Final project for CS825 Graph Theory. See final report [here](#) (*Spring 2021*).
- Completed a semester of research work under Prof. Shrisha Rao at IIIT Bangalore exploring the effects and spread of human prejudice through agent based modelling. The paper detailing this work has been accepted into the Journal of Simulation. (*Fall 2020*)
- Completed a qualitative research project under Prof. Preeti Mudliar which studies the critical factors for the employability of Indian engineering graduates in IT. See final report [here](#). (*Fall 2020*)
- Completed a research internship under Prof. Dinesh Babu Jayagopi at IIIT Bangalore in the field of Natural Language Processing. (*Summer 2019*)

## TA Experience

**NPTEL course on Secure Computation**

Prof. Ashish Choudhury

July, 2021 - October, 2021

**CS 302 - Introduction to Automata Theory**

Prof. Shrisha Rao

August 2021 - December 2021

**CS 512 - Discrete Mathematics and Computability**

Prof. Srinivas Vivek

September 2021 - Current

## Awards and Achievements

- **Enlisted in Dean's Merit List**, IIIT Bangalore, for 5 consecutive years (2017-18, 2018-19, 2019-20, 2020-21, and 2021-22).
- Received a **Scholarship for Academic Excellence** from IIITB in the academic year 2018-19, worth INR 50,000.
- Received a **Post Graduate Scholarship** from the All India Council for Technical Education, worth INR 150,000.
- Awarded a student grant to attend USENIX Security '21
- Co-authored an article on the privacy implications of telemedicine in India with Prof. V. Sridhar. Published in *Financial Express*.
- Winner of **Yadalam Nanjaiah Shetty Rolling Shield** (Bangalore Inter-College Debate), organised by Rotary Club of Bangalore, 2019.
- Won 2<sup>nd</sup> place at **Speak Up - Turncoat Debate** at Mood Indigo 2018 (Asia's largest cultural fest), IIT Bombay.

## Aptitude Tests / National Examinations

### GRE General Test

*Quantitative: 169/170 (94<sup>th</sup> percentile)*

*Verbal: 163/170 (92<sup>nd</sup> percentile)*

### TOEFL iBT

*Overall Score: 119/120*

### Graduate Aptitude Test in Engineering (GATE)

*Marks: 44.47/100*

*Total candidates: 101,922*

*Rank: 2547*

### Joint Engineering Examination (JEE)

*Marks: 202/360*

*Total candidates: >1,100,000*

*Rank: 8198*

## Positions of Responsibility

- **Ex core Member of Zense** (IIIT Bangalore Developers Club): Head of Logistics.
- **Co-founder/Head of DebSoc: Debate Society**, IIIT Bangalore.
- **Core Member** of organising team for **Infin8**, IIIT Bangalore's Techno-Cultural fest.
- **Hosted TEDx IIIT Bangalore** held in March, 2018.
- **Hosted RunBhoomi**: Run for Lake Marathon organised by ELCIA in Bangalore, 2019.
- **Head Student Volunteer** for **IEEE InDIITA Workshop** held in Bangalore, 2019.
- **Volunteer for the IIITB senior mentorship program**, where I mentored thirteen 1st year undergraduate students and helped them in their transition to college life.
- **Hosted Sangam 2020**, IIIT Bangalore's annual alumni meet.