Sachin Mudaliyar

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Research Interests

I build and measure systems that keep the Internet open and private for people facing censorship and surveillance. My interests span censorship circumvention and how it reaches users without being enumerated by censors, measuring how censors and other gatekeepers (including LLM-based moderation) filter what people can see, and analyzing how everyday protocols and devices leak user data. I am also interested in measuring LLMs as gatekeepers of information, and in using them as tools for designing and evaluating defenses.

Education

Indian Institute of Technology Bombay 2024 – May 2027 (expected)
M.S. by Research, Computer Science and Engineering *CPI: 8.5/10*
Advisor: Prof. Devashish Gosain

Bharati Vidyapeeth College of Engineering 2018 – 2022
B.E., Computer Engineering *CGPA: 7.94/10*

Research Experience

Graduate Researcher, IIT Bombay 2024 – present
Advisor: Prof. Devashish Gosain

- Co-leading the design, implementation, and evaluation of a new anti-censorship tool; paper under submission (2026).
- Multi-institution collaboration with researchers at IIT Delhi.

Publications

* denotes equal contribution

[1] **Sachin Mudaliyar*** et al. **An anti-censorship tool** (title withheld for anonymous review). *Under submission*, 2026.

[2] Swastik Pattanaik*, **Sachin Mudaliyar***, Pushpak Pachpande*, Balasaheb Balkhande. **Person Acquisition and Identification Tool.** *International Research Journal of Engineering and Technology (IRJET)*, Vol. 9, Issue 4, 2022.

Teaching Experience

Teaching Assistant, IIT Bombay 2024 – present

- **CS 6008: Network Security** (Prof. Devashish Gosain) *Autumn 2026*
  Designed assignments on how systems are built for security, how they are attacked, and how to implement mitigations; handled evaluation for ∼60 students.
- **CS 224M: Computer Networks** (Prof. Devashish Gosain) *Spring 2026*
  Built a CTF-style lab exam on socket programming; designed assignments and handled evaluation.
- **CS 339 + CS 355: Abstractions and Paradigms for Programming + Lab** (Prof. Manas Thakur) *Autumn 2024, Autumn 2025*
  Resolved student doubts and evaluated lab exams for 200+ students.
- **CS 306: Implementation of Programming Languages Lab** (Prof. Uday Khedker) *Spring 2025*
  Resolved student doubts and evaluated lab exams for 200+ students.

Selected Projects

FreeBSD Kernel Packet Filter `Netfilter-Kernel-Module`

- Loadable FreeBSD kernel module that hooks the `pfil` framework to inspect TCP payloads and drop HTTP requests by `Host` header, emulating censor-style domain blocking. (Course: Privacy Enhancing Technologies)

Wireshark VPN Traffic Classifier

- Lua dissector plugin for Wireshark that identifies and captures WireGuard and OpenVPN traffic. (Course: Privacy Enhancing Technologies)

MLPerf Inference v3.0 Submission `mlperf_inference_submissions_v3.0`

- Benchmarked ML models on Apple M1 and contributed results to the MLCommons MLPerf Inference v3.0 submission round (2023).

Nand2Tetris: Computer System from First Principles `github.com/Sachin-23`

- Built a full computer stack from NAND gates upward: a 16-bit CPU, a Hack assembler, a stack-VM translator, a Jack compiler, and a Jack operating system, all in C++. Wrote a rocket simulation that runs on this stack.

Experience

Independent Study and Projects 2022 – 2024

- Prepared for GATE CSE (see Awards).
- Completed Nand2Tetris Parts I & II (Coursera) and contributed to the MLPerf Inference v3.0 round (see Projects).
- Delivered contract robotics/IoT projects for Cluebots.

Cluebots Dec 2020 – May 2021
Robotics & IoT Intern

- Built robots and IoT devices on ESP32 microcontrollers, programmed in MicroPython.

Awards & Competitions

- **Winner**, TyroCTF, IIT Bombay (team M4D) 2024
- **GATE CSE:** All India Rank 800 (top 0.8% of ∼100,000 candidates) 2024
- Competed in many Capture-the-Flag contests, including Google CTF 2018 – 2022

Relevant Coursework

IIT Bombay: Processor Design (9/10), Privacy Enhancing Technologies (8/10), Web Security (8/10).
Self-study: Nand2Tetris Parts I & II (Coursera); Harvard CS50 Web Programming (capstone); Harvard CS50 AI (projects).

Skills

Languages: C, C++, Go, Rust, Haskell, Java, JavaScript, Python, Lua
Networking & Security: Scapy, tcpdump, Wireshark (incl. Lua dissectors), Docker, FreeBSD kernel modules (`pfil`)
5G: Core and RAN emulation (Open5GS, PacketRusher)
Embedded: ESP32, MicroPython

Service & Leadership

Departmental Placement Coordinator, IIT Bombay 2025 – 2026

References

Prof. Devashish Gosain, Indian Institute of Technology Bombay devashishg@iiitd.ac.in
M.S. advisor

Prof. Piyush Kumar Sharma, Indian Institute of Technology Delhi piyushs@iiitd.ac.in
Research collaborator

Prof. Manas Thakur, Indian Institute of Technology Bombay manas@cse.iitb.ac.in
TA supervisor (CS 339 + CS 355)