

Gargi Sarkar

Cybercrime Researcher | AI & Cybersecurity | Digital Policing

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Interdisciplinary researcher working at the intersection of cybersecurity, criminology, and human-centered security. My research investigates the technological, behavioral, and operational dynamics of cybercriminal ecosystems, including online fraud, scam operations, and cyber-enabled coercion. I develop empirical methods and computational frameworks to understand, detect, and disrupt human-targeted cybercrime by integrating insights from behavioral science and criminological theory. Through collaborations with law enforcement agencies and academic partners, my work advances both scientific understanding and practical approaches to cybercrime investigation, prevention, and policing. I seek to expand this research agenda through international collaboration in human-centered security and digital forensics, while advancing empirical approaches to cybercrime investigation, prevention, and policing.

Research Interests: Cybercrime Investigation & Digital Policing · Human-Centered Security · Computational Criminology

EXPERIENCE

University of Petroleum and Energy Studies (UPES)

Assistant Professor

August 2026 – Present

School of Computer Science (SoCS)

- Teaching and research in cybercrime investigation, digital forensics, and AI/ML-based fraud detection within the School of Computer Science.

International Institute of Information Technology Hyderabad

Post-PhD Research Scientist

August 2025 – April 2026

Hyderabad, India

- Led research in cybercrime investigation, digital evidence analysis, and emerging cybercrime analysis.
- Collaborated with state law enforcement agencies on applied cybercrime research and investigative frameworks.

C3iHub, Indian Institute of Technology Kanpur

Doctoral Researcher | C3iHub Research Fellow (Cybersecurity)

August 2022 – July 2025

Kanpur, India

- Conducted applied cybercrime research funded by the **C3iHub Doctoral Research Fellowship**, **Microsoft Research India**, and the **Department of Science and Technology (DST), Government of India**, producing tools and frameworks deployed with law enforcement partners.
- Contributed to interdisciplinary research bridging computer science, criminology, and cyber law; collaborated with Telangana and Uttar Pradesh state police on complaint data analysis.

This research role was undertaken in parallel with the PhD program, Department of Computer Science and Engineering, IIT Kanpur.

EDUCATION

Indian Institute of Technology Kanpur

Ph.D. in Computer Science and Engineering (Coursework CGPA: 9.5/10)

2021 – 2025

Kanpur, India

- Degree awarded:** December 2025
- Thesis:** *Digital Investigative Infrastructures for Cybercrime: A Human-Centric Approach from India's Policing Perspective*
- Supervisor:** Prof. Sandeep Kumar Shukla (Director, IIIT Hyderabad, since Aug 2025)

Presidency University

M.Sc. in Pure Mathematics (First Class)

2018 – 2020

Kolkata, India

University of North Bengal

B.Sc. in Mathematics (First Class)

2015 – 2018

Siliguri, India

PUBLICATIONS

Journals

- Sarkar, G.**, Charan, P. V. S., & Shukla, S. K. (2026). Understanding Jamtara cybercriminals: Poverty, opportunity, and the rise of organized criminal networks. *Humanities & Social Sciences Communications* **Q1**
- Negi, R., **Sarkar, G.**, and Shukla, S.K. (2026). AuditorMatch: A data-driven decision-support system for evaluating and selecting CERT-In empaneled cybersecurity auditors. *Computers & Security* **Q1**
- Lazarus, S., & **Sarkar, G.** (2026). Malware as a Service in Human Trafficking Operations at a Scam Compound: Cybercrime Infrastructure and Forced Labour as Structurally Interdependent. *Journal of Human Trafficking* **Q1**

- Lazarus, S., & **Sarkar, G.** (2026). Strait of Hormuz: How the 2026 US–Israel–Iran Conflict Illuminated a Cascade of Global Cybercrime. *Deviant Behavior* **Q1** 
- **Sarkar, G.**, & Shukla, S. K. (2024). Bi-directional exploitation of human trafficking victims: Both targets and perpetrators in cybercrime. *Journal of Human Trafficking*, 1–22. **Q1** 
- **Sarkar, G.**, & Shukla, S. K. (2024). Reconceptualizing online offenses: A framework for distinguishing cybercrime, cyber-attacks, and cyberterrorism in the Indian legal context. *Journal of Economic Criminology*, 4, 100063. **Q1** 
- Aljaradat, A., **Sarkar, G.**, & Shukla, S. K. (2024). Modelling cybersecurity impacts on digital payment adoption: a game theoretic approach. *Journal of Economic Criminology*, 5, 100089. **Q1** 
- **Sarkar, G.**, & Shukla, S. K. (2023). Behavioral analysis of cybercrime: Paving the way for effective policing strategies. *Journal of Economic Criminology*, 2, 100034. **Q1** 

Conference Proceedings

- **Sarkar, G.**, Sachdeva, A., and Shukla, S.K. (2026). From Trust to Lock-In: Human-Centered AI for Understanding Investment Fraud Narratives in Indian Digital Communities. In *Proc. of SPAIC '26 (co-located with AsiaCCS 2026)*. **CORE A** 
- **Sarkar, G.**, Hardeep Singh, Subodh Kumar, and Sandeep K. Shukla. (2023) Tactics, techniques and procedures of cybercrime: A methodology and tool for cybercrime investigation process. In *Proceedings of the 18th International Conference on Availability, Reliability and Security*, pp. 1–10, 2023. **CORE B** 

Preprints / Archived Manuscripts

- Goni Anagha, Vishakha Dasi Agrawal, **Sarkar, G.**, Vemuri, K., & Shukla, S. K. (2026). Modeling Behavioral Signals in Job Scams: A Human-Centered Security Study. *arXiv*, 2601.19342. 
- Sachdeva, A., Saravanan, R., **Sarkar, G.**, Vemuri, K., & Shukla, S. K. (2025). BEACON: A Unified Behavioral-Tactical Framework for Explainable Cybercrime Analysis with Large Language Models. *arXiv*, 2512.06555. 
- **Sarkar, G.**, & Shukla, S. K. (2025). Cyber Slavery Infrastructures: A Socio-Technical Study of Forced Criminality in Transnational Cybercrime. *arXiv*, 2510.12814. 
- **Sarkar, G.**, & Shukla, S. K. (2024). Policing Transnational Cybercrime: A Critical Assessment of the Anticipated Impact of the United Nations Convention against Cybercrime in India and Worldwide. *ssrn.5899223*. 

Selected Research Impact

- 260+ Google Scholar citations; h-index: 6; i10-index: 5.
- Published 8 Q1 journal articles, 2 refereed conference papers (CORE A and CORE B), and 4 archival manuscripts.
- Developed Cybercrime Navigator, a cybercrime investigation framework supported by Microsoft Research India and featured by the Department of Science and Technology (DST), Government of India.

ACADEMIC SERVICE

Sub-Reviewer

- ACM SAC 2024 • Behaviour & Information Technology • Computers & Security • Frontiers in Psychiatry

Reviewer

- Digital Threats: Research and Practice (DTRAP) • Deviant Behavior • Journal of Criminal Psychology • Psychology, Crime and Law • Security Journal • Safer Communities • Environmental Management: Economics and Policy

TEACHING AND SUPERVISION

Project Mentor | International Institute of Information Technology (IIIT) Hyderabad

- CG4.402: Introduction to Neuroeconomics (Aug–Dec 2025) – Mentored 5 undergraduate research projects examining behavioral-economic factors in cyber fraud and supported the preparation of 2 archived student research papers.

Teaching Assistant | Indian Institute of Technology (IIT) Kanpur

- **Security & Cryptography:** CS628 Computer Systems Security (Aug–Nov 2022); CS641 Modern Cryptology (Jan–May 2023); CS961 Introduction to Cryptography (e-Masters, Jan 2023–Present)
- **Machine Learning & Systems:** CS771 Introduction to Machine Learning (Aug–Nov 2023); CS633 Parallel Computing (Jan–May 2024)
- **Mathematics & Algorithms:** CS345 Algorithms II (Aug–Nov 2021; Jan–May 2022); CS972 Introduction to Linear Algebra (e-Masters, Apr–Jun 2023; Jan–Mar 2024); CS201 Discrete Mathematics (Aug–Nov 2024); CS202 Mathematical Logic (Jan–Mar 2025); CS203 Introduction to Probability (Mar–May 2025)
- **Tutor:** ESC101 Fundamentals of Computing (May–Jul 2022)

- Modern Algebra

Grants, Fellowships and Awards

C3iHub Doctoral Research Fellowship <i>IIT Kanpur (C3iHub)</i>	2022 – 2025 INR 25,80,000
• Awarded a competitive doctoral research fellowship to conduct research on cybercrime investigation and digital policing.	
Cybercrime Navigator: Phase I <i>Microsoft India (CSR Grant)</i>	2022 – 2024 INR 50,00,000
• Scientific Lead for the development of AI-assisted cybercrime investigation technologies.	
Cybercrime Navigator: Phase II <i>Dept. of Science & Technology (DST), Govt. of India</i>	2024 – Present INR 1,00,00,000
• Scientific Lead for the next phase of AI-enabled cybercrime investigation technologies under a DST-funded national project.	

Honours & Recognition

- **ISEC Best PhD Award (Shortlisted), 2026** – PhD thesis shortlisted by the International Society of Economic Criminology (ISEC) for outstanding doctoral research in economic criminology.
- **Darkathon – National Finalist, 2022** – Selected as a national finalist by the Narcotics Control Bureau, Government of India, for developing solutions targeting anonymity in dark-web narcotics markets.
- **GATE, Mathematics, 2021** – Qualified one of India’s premier national competitive examinations for postgraduate engineering education and research recruitment.
- **JAM, Mathematics, 2018** – Qualified India’s national entrance examination for admission to postgraduate science programmes at the Indian Institutes of Technology (IITs).

TALKS AND PRESENTATIONS

- Invited for a talk at the **International Conference on Availability, Reliability and Security (ARES), 2023**, Benevento, Italy
- Invited for a talk on the special track for law enforcement officers to investigate cybercrime at **c0c0n - XVI, International Cyber Security Conference**
- Delivered lecture in the **Advanced Certification Program in Cyber Security and Cyber Defense**, hosted by TalentSprint.

ACTIVITIES

- Cybercrime Victim Support | Social Service Initiative at IIT Kanpur**
- Established and led a cybercrime helpline for students, offering end-to-end support including legal guidance, financial recovery, and reporting assistance, along with conducting proactive awareness sessions on emerging cybercrime methods to improve campus community resilience
- Other Notable Contributions**
- Organizer, **HACK IITK 2024** - a national-level cybersecurity hackathon hosted at IIT Kanpur
 - Presented the **Cybercrime Navigator** tool at the **3rd National Workshop on Technology Innovation in Cyber-Physical Systems (TIPS)**, organized by the Department of Science and Technology, Government of India

RESEARCH METHODS, TECHNICAL SKILLS & LANGUAGES

- Research Methods:** Empirical Security Research, Mixed-Methods Research, Human-Centered Security, Computational Criminology, Cybercrime Measurement, Behavioral Analysis, Interview-Based Research, Qualitative Analysis, Document Analysis, Policy Analysis
- Cybersecurity & Investigation:** Cybercrime Investigation, Digital Evidence Analysis, OSINT, Fraud and Scam Ecosystem Analysis, Dark Web Analysis (Tor), Cyber Threat Intelligence
- AI & Data Analysis:** Large Language Models (Applied), Natural Language Processing, Explainable AI, Unsupervised Learning, Behavioral and Tactical Modeling
- Programming & Tools:** Python, C, MATLAB, HTML/CSS, $\LaTeX$, Markdown
- Languages:** English (Full Professional Proficiency), Bengali (Native), Hindi (Full Professional Proficiency)