SOURADIP NATH

snath8@asu.edu | souradipnath.com

souradip-nath | confusedDip | souradip-nath | SouradipNath4

Tempe, Arizona - 85288, USA

Reseearch Interests

Human Factors in Security and Privacy; Access Control; Large Language Models and Agentic AI

Education

- **Arizona State University** *Fall 2023 - Current*
  Doctor of Philosophy (Ph.D.) in Computer Science Tempe, AZ, USA
  - Advisor: Gail-Joon Ahn
- **Indian Institute of Engineering Science and Technology, Shibpur** *Spring 2022*
  Bachelor of Technology (B.Tech.) in Information Technology Howrah, India
  - GPA: 9.93/10.0 (First Class with Honors, Presidential Gold Medalist)

Publications

C=Conference, J=Journal

[C.1] **Souradip Nath**, Ananta Soneji, Jaejong Baek, Tiffany Bao, Adam Doupé, Carlos Rubio-Medrano, and Gail-Joon Ahn, "It's almost like Frankenstein: Investigating the Complexities of Scientific Collaboration and Privilege Management within Research Computing Infrastructures", in *2025 IEEE Symposium on Security and Privacy (SP)*, May 2025, pp. 2995–3013. [PDF]

[C.2] **Souradip Nath**, Keb Summers, Jaejong Baek, and Gail-Joon Ahn. "Digital Evidence Chain of Custody: Navigating New Realities of Digital Forensics." In *2024 IEEE 6th International Conference on Trust, Privacy and Security in Intelligent Systems, and Applications (TPS-ISA)*, pp. 11-20. [PDF]

[J.1] **Souradip Nath**, and Ruchira Naskar. "Automated image splicing detection using deep CNN-learned features and ANN-based classifier." *Signal, Image and Video Processing* 15, no. 7 (2021): 1601-1608. [PDF]

Experience

- **Global Security Initiative, Arizona State University: Graduate Research Associate** *Spring 2023 - Current*
  Advisor: Gail-Joon Ahn Tempe, AZ, USA
  - Leading research projects that integrate human-centered and technical approaches to security and privacy.
  - Designing and executing semi-structured interview studies and conducting thematic analysis to understand user practices, challenges, and needs around security and privacy.
  - Complementing human-centered findings with technical system-level exploration to design and implement deployable, system-level access control solutions.
  - Synthesizing research findings into actionable insights and disseminating them to diverse audiences through papers, posters and conference talks.
- **Deutsche Bank Technology, Data & Innovation: Technical Analyst Intern** *Summer 2021*
  Manager: Pragnya Seth Pune, India
  - Utilized Python Pandas library to clean large datasets of scheduled jobs, conducted data analysis, and came up with an optimization algorithm for job scheduling using the Greedy algorithm.
  - Collaborated with a team of 3 and proposed a general framework for identifying an optimized job scheduling against a multi-parameter cost function.
- **IIEST, Shibpur: Summer Research Intern** *Summer 2020*
  Advisor: Ruchira Naskar Howrah, India
  - Researched "Image Splicing Detection using Deep Neural Networks" with a Proof of Concept implemented using Python frameworks Keras, and Tensorflow.
  - Proposed a novel Neural Network to classify authentic and spliced images with more than 97% accuracy.

Teaching Experience

- **School of Computing and Augmented Intelligence, ASU: Teaching Assistant** *Fall 2024*
  Course: Computer and Network Forensics, Instructor: Jaejong Baek Tempe, AZ, USA
  - Assisted in delivering a senior-level course (lectures and lab sessions) on Digital Forensics, covering the fundamentals of computer and network forensics including cloud, email, and mobile forensics.

Projects

- **A Human-centered Exploration of Access Control within Scientific Collaboration**
  Tools: Zoom (data collection), Otter.ai (transcription), MaxQDA (qualitative analysis), ReCal2 (intercoder reliability)
  - Conducted a **semi-structure interview-based study** with 24 key stakeholders of Research Computing Infrastructures (RCIs) to identify security and usability challenges in access control for scientific collaboration.
  - Applied qualitative **thematic analysis** to interview data, uncovering that informal, trust-based access control and fragmented system design create significant security challenges and usability issues.
  - Formulated actionable recommendations for improving security and usability in RCIs including design heuristics for effective access control, establishing a new direction for future research in RCI security.
  - Authored a **top-tier security paper ([C.1])** accepted by the IEEE S&P, 2025, which provides the first qualitative study on human factors in RCI security.
- **Towards Collaboration-Aware Resource Sharing in Research Computing Infrastructures**
  Tools: Python (tool implementation), VirtualBox, Ubuntu Server, OpenLDAP, NFS, Slurm (environment simulation)
  - Investigated existing resource sharing practices within Research Computing Infrastructures (RCIs), revealing key gaps in their ability to support secure authorization in dynamic collaborative workflows.
  - Developed CLEARS, a novel framework for collaboration-aware resource sharing that formally represents collaboration contexts to guide secure, dynamic access authorization in RCIs.
  - Implemented a prototype of CLEARS and conducted a scenario-based case study with experimental evaluation to demonstrate that it delivers precise access enforcement while maintaining minimal execution overhead.

Professional Service

- **Organzing Committee Member:** ACM SACMAT 2025-2026
- **External Reviewer:** ACM ASIACCS 2025, ACM CODASPY 2025, ACM SACMAT 2024-2025, CSET 2024

Honors and Awards

- **President of India Gold Medal for University Topper (Undergraduate)** *December 2022*
  Indian Institute of Engineering Science and Technology, Shibpur, India
- **Silver Medal for Department Topper (Information Technology)** *December 2022*
  Indian Institute of Engineering Science and Technology, Shibpur, India
- **New American University Scholarship – USD 10,000** *August 2022*
  Arizona State University, AZ, USA [🌐]
- **Swami Vivekananda Merit-cum-Means Scholarship – INR 2,40,000** *August 2018*
  Government of West Bengal, India [🌐]
- **GP Birla Merit-cum-Means Scholarship – INR 2,00,000** *August 2018*
  GP Birla Educational Foundation, India [🌐]

Mentorship Experience

- **Faraz Hashempoor: CTF High School Summer Intern: Arizona State University** *Summer 2025*
  Conducted a semi-automated analysis of safety and privacy conversations on ChatGPT-based mental health support. [Poster]
- **Jacob Li: CTF High School Summer Intern: Arizona State University** *Summer 2025*
  Conducted a reddit-based analysis of PowerSchool data breach understanding stakeholder-specific insights and reactions. [Poster]
- **Shreyan Nath: CTF High School Summer Intern: Arizona State University** *Summer 2025*
  Conducted a mixed methods reddit-based analysis on users' safety and privacy concerns around virtual reality technologies. [Poster]
- **Riya Dhuri: CTF High School Summer Intern: Arizona State University** *Summer 2024*
  Conducted a retrospective study exploring young adults' maturation toward social media safety and privacy. [Poster]
- **Deepika Moola: CTF High School Summer Intern: Arizona State University** *Summer 2024*
  Conducted a mixed methods reddit-based analysis on how people on the internet talk about online safety and privacy. [Poster]

Skills

- **Programming Languages:** Python, C/C++, Bash
- **Qualitative Analysis:** MaxQDA, Google Sheets, ReCal2
- **Other Tools & Technologies:** VirtualBox, Ubuntu Server, OpenLDAP, NFS, Slurm

REFERENCES

1. **Gail-Joon Ahn**
   Professor, School of Computing and Augmented Intelligence
   Arizona State University
   Email: gahn@asu.edu
   Relationship: Ph.D. Advisor

2. **Jaron Mink**
   Assistant Professor, School of Computing and Augmented Intelligence
   Arizona State University
   Email: jaron.mink@asu.edu
   Relationship: Advisor, Collaborator

3. **Carlos Rubio-Medrano**
   Assistant Professor, Computer Science - Cybersecurity
   Texas A&M University-Corpus Christi (TAMU-CC)
   Email: carlos.rubiomedrano@tamucc.edu
   Relationship: Advisor, Collaborator

4. **Ananta Soneji**
   Ph.D. Candidate, School of Computing and Augmented Intelligence
   Arizona State University
   Email: asoneji@asu.edu
   Relationship: Mentor, Collaborator