Shubham SINGH
Ph.D. Student

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RESEARCH INTERESTS

Machine Learning   Computational Social Science   Privacy and Security   Information Retrieval   Network Science

EDUCATION

2019 - Present	**Doctor of Philosophy, Computer Science**, University of Illinois at Chicago (UIC)
2016	**Bachelor of Technology, Computer Science**, Indraprastha Institute of Information Technology (IIIT), Delhi

PUBLICATIONS

- Mohammad Taha Khan, Christopher Tran, **Shubham Singh**, Dimitri Vasilkov, Chris Kanich, Blase Ur, and Elena Zheleva. Helping users automatically find and manage sensitive, expendable files in cloud storage. In *30th USENIX Security Symposium (USENIX Security 21)*. USENIX Association, August 2021.

- Rishabh Kaushal, **Shubham Singh**, and Ponnurangam Kumaraguru. NeXLink: Node Embedding Framework for Cross-Network Linkages Across Social Networks. In *Proceedings of NetSci-X 2020: Sixth International Winter School and Conference on Network Science*, pages 61–75, Cham, 2020. Springer International Publishing.

- **Shubham Singh**, Rishabh Kaushal, Arun Balaji Buduru, and Ponnurangam Kumaraguru. KidsGUARD: Fine Grained Approach for Child Unsafe Video Representation and Detection. In *Proceedings of the 34th ACM/SIGAPP Symposium on Applied Computing*, SAC '19, page 2104–2111, New York, NY, USA, 2019. Association for Computing Machinery.

RESEARCH EXPERIENCE

January 2020 Present	**Research Assistant, UIC, Chicago** **Mentors:** Prof. Chris Kanich, Prof. Blase Ur ❯ Developing ML-based system to help users remove sensitive files from online cloud storage and reducing their risk of breach by 26%. ❯ Analysing the effect of ML-based decision making from the lens of algorithmic fairness for public health safety.
October 2017 July 2019	**Research Associate, PRECOG RESEARCH LAB, New Delhi** **Mentors:** Prof. Ponnurangam Kumaraguru, Prof. Arun Balaji Buduru ❯ Applied deep learning models to detect unsafe content on video streaming platforms, making them 30% more safe for children. ❯ Created node embedding framework for efficient cross-network representation of user profiles, beating the then state-of-the-art approach by 20%. ❯ Studied the discriminative features of entity-specific sensitive information on the internet.

WORK EXPERIENCE

June 2016 September 2017	**Full Stack Developer, TAPZO (ACQUIRED BY AMAZON PAY), Bengaluru** **Mentor:** Adarsh Pandey ❯ Saved hundreds of hours in development cycle by building a generic cross-category coupons module for Android application, that was used by 7 other teams. Also, developed food, bill payment and hotel categories from scratch and launched to 5M users. ❯ Wrote back-end services to track transaction state changes and user actions for providing better user reinforcements that improved user's post-transaction experience.
May 2015 July 2015	**Application Developer Intern, MOBIKWIK, Gurgaon** **Mentor:** Atul Goyal ❯ Migrated Android build environment from Maven to Gradle for better dependency management and faster build times. ❯ Rewrote the application network layer for multi-thread performance and error handling to support low-bandwidth users.

⬛ Teaching Experience

August 2019 December 2019	**Graduate Teaching Assistant, CS 361: Computer Systems Programming, UIC** **Mentor:** Prof. Chris Kanich ❯ Designed, instructed, and evaluated programming labs and assignments for Computer Systems Programming course, taken by 180+ undergraduate students. ❯ Received an average 4.48/5.0 in the evaluation feedback.
June 2018	**Lab Instructor, Summer School on Social Computing, IIIT-Hyderabad** ❯ Conducted lab sessions for 50+ summer school participants on data collection using APIs, data analysis and constructing network graphs. ❯ Made the tutorial code public at 🞂 precog-iiitd/social-computing-18 .
January 2016 May 2016	**Teaching Assistant, CSE 501: Designing Human Centered Systems, IIIT-Delhi** **Mentor:** Prof. Ponnurangam Kumaraguru ❯ One of the select few undergraduate teaching assistants, for a class taken by 80+ undergraduate and graduate students. ❯ Assisted in defining the course structure, designed and evaluated assignments and course projects.

📢 Talks

July 2019	**Cybersafety for Kids on Video Streaming Platforms**, ACM Summer School on Cybersecurity and Data Analytics, IIIT-Delhi

🖥 Selected Projects

MAGNUS   2019
Mentor: Prof. Xinhua Zhang
Used CNNs and Game tree to build a Chess-playing agent that could beat a random agent 84% of the time.

Image Inpainting   2020
Mentor: Prof. Xinhua Zhang
Validated GAN-based deep learning model and contextual loss function on a 200K image dataset to inpaint images with reconstruction defects.

SnooKnows   2015
Mentor: Prof. Ponnurangam Kumaraguru
Developed a Django-based web application that uses NLP to fetch the public comments of real Reddit users and reports their vulnerability to online harassment. Accepted as a poster in **CERC Security and Privacy Symposium 2016, IIIT-Delhi**.
🞂 shubhams/PSOSMProject   🔗 cerc.iiitd.ac.in/spsymp16/agenda

☰ Skills

Programming Languages	Python, MATLAB, Java, JavaScript, C, C++
Frameworks	PyTorch, Keras, Numpy, Scikit, Flask, NodeJS, Celery, Android
Databases	MongoDB, MySQL, PostgreSQL
Tools	Git, Vim, Sublime, Jupyter, IntelliJ, LaTeX

✋ Activities and Volunteer Work

2020	**Treasurer, CSGSA**, UIC Treasurer and organizer for various events for Computer Science graduate students at UIC.
2016	**Student Mentor**, IIIT-Delhi Mentored 10+ freshman students for the academic and non-academic issues faced by them. Received **Best Student Mentor Award**.