

TANMAY GHAI

Software Engineer | Researcher

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📍 San Francisco Bay Area 🌐 [my homepage](#)

I am a software engineer at [Twitter](#) and a security, distributed systems & machine learning researcher in the networking and cybersecurity division at the [Information Sciences Institute](#).

🎓 EDUCATION

2020 – 2021 **Master of Science in Computer Science**, University of Southern California
2015 – 2019 **Bachelor of Arts in Computer Science**, University of California, Berkeley

👛 EXPERIENCE

- May 2022 Present** **Software Engineer II, TWITTER INC.**
- Engineer for the security and privacy team focused on threat intelligence and detection, platform security, applied cryptography, vulnerability management, privacy engineering/data management, and privacy-preserving user data.
- [Scala/Python](#) [Bazel](#) [Aurora/Mesos](#) [Kafka](#)
- Jan. 2022 Present** **Researcher, INFORMATION SCIENCES INSTITUTE**
- Researcher in the USC D-Security lab advised by Prof. [Srivatsan Ravi](#); continued on post my master's where I was a graduate research assistant in the same group from July 2020 – Dec. 2021.
 - My (broad) research interests are in privacy-preserving technologies and secure systems, particularly at the intersection of scalable distributed computing, data privacy, and machine learning. Currently, I'm looking into privacy-preserving machine learning and secure multi-party computation.
- [C++/Python](#) [PALISADE](#) [SEAL](#) [KGTK](#)
- July 2019 May 2022** **Software Engineer I – II, WORKDAY INC.**
- Engineer and team lead for the reporting and analytics engine - a multi-tenanted, performant, in memory processing engine responsible for over 2 billion+ queries monthly. Built Cosmos - a framework for delivered analytic data sources and applications; performs 5x faster than existing RaaS reports and incremental data extraction using delta caches saves 99%+ of compute time.
 - Engineer and scrum-master for the web-server infrastructure team responsible for all in/e-gress traffic into Workday. Delivered multi-step transaction processing framework for personas, a thread-level refactoring of platform level logging, and a REST streaming initiative with the VSS team, scanning all uploads/download within Workday.
- [Java](#) [Spring](#) [Tomcat](#) [Spark/HDFS](#) [Kafka](#)

📖 PUBLICATIONS

- 2022 "Evaluating the Feasibility of a Provably Secure Privacy-Preserving Entity Resolution Adaptation of PPJoin using Homomorphic Encryption". arXiv, 2022. [[pre-print](#)]
- 2022 "Secure Federated Learning for Neuroimaging". arXiv, 2022. [[pre-print](#)]
- 2021 "Secure neuroimaging analysis using federated learning with homomorphic encryption". In 17th International Symposium on Medical Information Processing and Analysis, volume 12088, pages 351–359. SPIE, 2021. [[paper](#)]
- 2021 "AMPPERE: A Universal Abstract Machine for Privacy-Preserving Entity Resolution Evaluation", page 2394–2403. Association for Computing Machinery, New York, NY, USA, 2021. [[paper](#)]

🏆 AWARDS

- 2022 [Viterbi Master's Student Award](#) for Best Research in the Computer Science Department. An article published to the USC Viterbi website detailing my work and award can be found [here](#).
- 2020 Member of the 2020 Cohort of the [Viterbi Summer Honor's program](#) (VSOP).
- 2018 Awarded UC Berkeley's [Dean's List](#) for the College of Letters & Sciences in the Spring 2018 semester.

</> SKILLS

Programming	Python, Java, Scala, C/C++
Frameworks	Spring, Kafka, Bazel, Spark/HDFS, PyTorch, Aurora/Mesos, Tomcat, Docker
Data Stores	MySQL, MongoDB, BigQuery, Manhattan
Other Libraries	PALISADE, SEAL, KGTK