Last updated on August 18, 2022

TANMAY **GHAI**

Software Engineer | Researcher

+1 (408) 858 7731 @ tanmayghai@berkeley.edu
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-preservify-ing 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 CSCI Best Research Award for work done while a master's student at USC.
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