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Tanmay Ghai

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Education

- **University of Southern California** — Los Angeles, CA
  Master of Science in Computer Science — July 2020 – Dec. 2021
  Member of '20 Viterbi Summer Honors Program (VSOP), GPA: 3.925/4.0
- **University of California, Berkeley** — Berkeley, CA
  Bachelor of Arts in Computer Science — Aug. 2015 – May 2019
  Member of CSUA, Sports Analytics Group at Berkeley, Dean's List: Spring 2018, Spring 2019

Experience

- **Workday, Inc.** — Pleasanton, CA
  Software Development Engineer II — July 2019 – Present

  I am a software engineer on the Business Intelligence (BI) team, contributing to Workday's **Reporting & Analytics Engine** - a multi-tenanted, high performance, in-memory processing engine. Formerly, I was on the ui-server team where I was a SDE 1 from July 2019 – Oct. 2020 and an intern in the summers of 2017 & 2018.
  - **Cosmos**: framework to build *delivered* analytic data sources and applications: performs **5x faster** than existing RaaS reports, incremental data extraction using delta-caches saves **99.8% of compute time**; implementing a Cosmos data source for Workday's new acquisition Peakon.
  - **Core Reporting**: Triaged over 50+ issues spanning advanced/matrix reports, rolling aggregation/time series, computed views & calculated fields.
  - **UIS**: Developed **Hubs** (a multi-step transaction processing framework) to support various Workday personas, implemented **Dovah** (a thread-level refactoring of platform level logging) to provide performant and finer granularity logs, and led the **VSS Streaming** initiative (a REST streaming approach to scan millions of uploads/downloads within Workday) on over a 1000 endpoints.
  - **Internships**: In 2018, built **a full-stack, interactive scheduling platform** for workforce management and in 2017, delivered a **cross stack debugging micro-service** to detect & alert errors.
- **ServiceNow, Inc.** — Santa Clara, CA
  Cloud Platform Development Intern — May 2016 – Aug. 2016
  - **Licensing & Usage Analytics**: Analyzed usage analytics for over 500+ customers via Matlab and Tableau.

Research & Publications

- **Information Sciences Institute, USC** — Los Angeles, CA
  Graduate Research Assistant – **USC D-Security**, advised by Prof. Srivatsan Ravi. — July 2020 – Present

  My research interests are in the intersection of scalable distributed computing, cyber-security, data privacy, machine learning and their applications to real-world problems.
  - **Privacy-preserving entity resolution**: AMPPERE: A Universal Abstract Machine for Privacy-Preserving Entity Resolution Evaluation. **CIKM '21**. Yixiang Yao, **Tanmay Ghai**, Srivatsan Ravi, and Pedro Szekely. [paper]
  - **Secure federated learning**: Secure Neuroimaging Analysis using Federated Learning with Homomorphic Encryption. **SIPAIM '21**. Stripelis, Dimitris*, Hamza Saleem*, **Tanmay Ghai***, Nikhil J. Dhinagar*, Umang Gupta, Chrysovalantis Anastasiou, Greg Ver Steeg, Srivatsan Ravi, Muhammad Naveed, Paul M. Thompson and J. Ambite. [paper]

Projects

- **Octane**: A simplified version of an SDN based Ethane-like system as described in the paper by Casado et al here.
- **Secure Audit System**: A decentralized, secure audit system using RSA digital signatures, AES-128 and homomorphic encryption. Write-up can be found here.
- **Morse Code Decoder**: CNN-LSTM-CTC deep learning model to decipher morse code irrespective of the medium used to generate it. Experiments and results can be found here.
- **Real-time N-Body Cosmological Simulation**: N-Body cosmological simulation build with WebGL and ThreeJS to depict gas clouds coalescing with each other to form galaxies. Live demo and blog can be found here.

Programming Skills

- **Languages**: Java, C++, Python, JS, SQL, Scala — **Technologies**: Kafka, Spring, PyTorch, Hadoop, Spark