Tanmay Ghai

tanmayghai18.github.io

Email : tanmayghai@berkeley.edu
Mobile : +1 (408) 858-7731

Education

- **University of Southern California** — Los Angeles, CA
  Master of Science in Computer Science — July 2020 – Dec. 2021

  Relevant Coursework: Analysis of Algorithms, Deep Learning & its Applications, Advanced Data Stores, Applied Cryptography, Security & Privacy in Big Data, **Member of 2020 Viterbi Summer Honors Program (VSOP)**

- **University of California, Berkeley** — Berkeley, CA
  Bachelor of Arts in Computer Science — Aug. 2015 – May 2019

  Relevant Coursework: Data Structures, Machine Learning, Advanced Algorithms, Databases, Networking, Operating Systems, Artificial Intelligence, Discrete Math and Probability Theory, Linear Algebra, Data Science, Computer Graphics

Experience

- **Workday, Inc.** — Pleasanton, CA
  Software Development Engineer II — Nov. 2020 – Present

  I am software engineer contributing to Workday's back-end web server, building robust, scalable frameworks, solutions and infrastructure for our platform. **(SDE I from July 2019 – Oct. 2020)**

  - **Hubs & Edit Flows**: Building out a new framework to support multi-step transaction processing, and a new hubs-view for all of Workday.
  - **Dovah**: Refactoring and re-implementing logging framework to be more efficient, easy-to-use, and accurately generate/aggregate data at the thread-level.
  - **Streaming to VSS**: Using REST to integrate back-end server nodes with the virus scanning microservice to stream files and scan millions of uploads within Workday's platform.
  - **Internship (May – Aug. 2018)**: Built a full-stack, interactive scheduling micro-system for team scheduling and workforce management. & **Internship (May – Aug. 2017)** Delivered a cross stack debugging microservice for developers to detect errors in the platform (scaled and dealt with millions of transactions per hour).

- **ServiceNow, Inc.** — Santa Clara, CA
  Cloud Platform Development Intern — May 2016 – Aug. 2016

  - **Licensing & Usage Analytics**: Wrote scripts and generated key reports on user behavior and usage analytics using machine learning via Matlab, Kibana, and Tableau to analyze customer usage trends for over 500+ customers

Research

- **Information Sciences Institute, USC** — Los Angeles, CA
  Graduate Research Assistant, 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.

  - **PPER using FHE**: Working on privacy-preserving entity resolution using fully homomorphic encryption in distributed systems and multi-party computational systems.
  - **Secure Federated Learning using FHE**: Implementing and analyzing performance of aggregation functions using fully homomorphic encyption, as they relate to federated learning applications.

Projects

- **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.
- **NBA Awards Predictor**: Collection and comparison of ML algorithms and their corresponding predictions for NBA awards utilizing data from 2000-2019.
- **Protein Structure Reconstruction**: Using FFT and backprojection, reconstructed a 3D visualization of a zika virus from a 2D image. Full write-up and experiments can be found here.

Programming Skills

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