Sundaram Ananthanarayanan

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Education

- **Stanford University** — Stanford, CA
  Master of Science in Electrical Engineering; GPA: 3.9/4.0 — *Sep. 2012 – Jun. 2014*
- **College of Engineering, Guindy, Anna University** — Chennai, India
  Bachelor of Engineering in Information Technology; GPA: 9.32/10.0 — *Aug. 2008 – June. 2012*

Working Experience

- **Netflix** — Los Gatos, CA
  Staff Software Engineer, Data Platform — *Dec 2019 - Present*
  - **Mantis**: Mantis is a stream processing engine developed at Netflix, designed to address the unique challenges posed by operational data. Over the past couple of years, I have been leading its development.
    - Transitioned Mantis from Apache Mesos to Kubernetes with an innovative architecture. Guided a team of senior engineers from prototype to production and open-sourcing.
    - Reduced annual compute costs by millions through ML-based container optimizations.
    - Championed Mantis adoption to other companies including Stripe.
  - **Flink**: I have also contributed to the Flink ecosystem at Netflix - a stream processing engine for analytical needs.
    - Created a system enabling users to backfill Flink pipelines using Apache Iceberg without code changes, eliminating the need to maintain separate batch jobs during outages.
    - Designed the system to mimic Kafka properties when reading from Data Lakes, ensuring effortless integration.
    - The system has been adopted by hundreds of pipelines within Netflix. Helped open-source the project, now utilized by other companies using Apache Iceberg.

- **Uber** — San Francisco, CA
  Senior Software Engineer II, Developer Platform — *May 2016 - Dec 2019*
  - **SubmitQueue**: 1000s of engineers committing changes concurrently to a repository leads to frequent master breakages. Explored & conceived a new system called *SubmitQueue* that guarantees an **always-green** master at scale. At Uber, *SubmitQueue* handles 1000s of commits/hr submitted by 1000s of engineers every day.
    - Led a team of 5 engineers to build the system: reading papers on state-of-the-art techniques used in similar domains such as Databases, experimented with various approaches to find a scalable solution, & architected the system to handle 1000s of changes/hr.
    - Published a research paper presenting the design & implementation of *SubmitQueue* at **Eurosys'19**.
  - **uCI**: Because existing open-source CI systems such as Jenkins did not scale to Uber's needs, I helped build *uCI*- a distributed system to handle reliable execution of millions of stateful tasks every day on 1000s of CI machines.
    - Led a team of 6 engineers to design a state-of-the-art cluster scheduler that handles faults gracefully (*reliability*), exploits data locality to come up with optimal placements (*performance*), scales horizontally on every layer (*scalability*), and finally guarantees isolation at task/resource levels.

- **Baidu Research Silicon Valley AI Lab** — Sunnyvale, CA
  Software Engineer — *Jan 2016 - May 2016*
  - **Speech Recognition**: Designed & productionized deep-learning based Speech Recognition APIs which power Android apps such as TalkType. .

- **Twitter Inc** — San Francisco, CA
  Software Engineer — *Jun 2014 - Jan 2016*
  - **AddressBook Infrastructure**: Engineered a system to store and retrieve contacts from the phone books of Twitter's 300M+ Monthly Active Users (MAUs).

Ancient History

- **Microsoft** — Redmond, WA
  Software Engineering Intern, Kernel Core — *Jun 2013 - Sep 2013*
- **Google Summer of Code** — Chennai, India
  Worked on Metalink Support for Google Chrome — *Jun 2012 - Sep 2012*
- **University of Waterloo** — Waterloo, Canada
  Research Intern - Worked on design & application of One-Instruction Processors — *Apr. 2011 – June. 2011*

Selected Publications

[1] **Sundaram Ananthanarayanan**, Masoud Saeida Ardekani, et al. "Keeping Master Green at Scale". *EuroSys Conference 2019, Dresden, Germany.*

[2] Dario Amodei, **Sundaram Ananthanarayanan**, et al. "Deep Speech 2 : End-to-End Speech Recognition in English and Mandarin". *International Conference on Machine Learning, ICML 2016.*

Selected Talks

- **Backfilling Streaming Data Pipelines using Kappa Architecture**
  - *Databricks Data + AI Summit, June 2022*
  - *LinkedIn, March 2022*
  - *Flink Forward, Nov 2021*
- **Keeping Master Green at Scale**
  - *Twitter, Jan 2022*
  - *Google Journal Club, May 2019*
  - *Facebook, Jan 2019*

Skills

- **Languages**: Java, Python, Scala, C++
- **Interests**: Distributed Systems, Stream Processing, Machine Learning, Reinforcement Learning