

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 - Stream Processing Engine for Operational Data:** Led the development of Mantis, a stream processing engine tailored to meet the operational data needs of Netflix.
 - 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.
 - **Backfilling streaming data pipelines using data lakes:** Teams building stream processing pipelines have to maintain separate batch jobs that pull data from warehouse during outages. Developed a system that allows users to backfill using the same pipeline reducing maintenance overhead.
 - Designed the system to mimic Kafka properties when reading from Data Lakes, making it seamless to integrate.
 - System adopted by 100s of pipelines within Netflix. Helped open-source the project which is used 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**. Adrian Coyler has covered it as part of *the morning paper*.
 - **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**
Software Engineering Intern, Kernel Core
Redmond, WA
Jun 2013 - Sep 2013
- **Google Summer of Code**
Worked on Metalink Support for Google Chrome
Chennai, India
Jun 2012 - Sep 2012
- **University of Waterloo**
Research Intern - Worked on design & application of One-Instruction Processors
Waterloo, Canada
Apr. 2011 - June. 2011

SELECTED PUBLICATIONS

- [1] **Sundaram Ananthanarayanan**, Masoud Saeida Ardekani, Denis Haenikel, Balaji Varadarajan, Simon Soriano, Dhaval Patel, and Ali-Reza Adl-Tabatabai. “Keeping Master Green at Scale”. In: *Proceedings of the Fourteenth EuroSys Conference 2019, Dresden, Germany, March 25-28, 2019*. 2019, pp.1–29:15. DOI: 10.1145/3302424.3303970. URL: <https://doi.org/10.1145/3302424.3303970>.
- [2] Dario Amodei, **Sundaram Ananthanarayanan**, et al. “Deep Speech 2 : End-to-End Speech Recognition in English and Mandarin”. In: *Proceedings of the 33rd International Conference on Machine Learning, ICML 2016, New York City, NY, USA, June 19-24, 2016*. 2016, pp. 173–182. URL: <http://proceedings.mlr.press/v48/amodei16.html>.
- [3] **Sundaram Ananthanarayanan**, Siddharth Garg, and Hiren D. Patel. “Low cost permanent fault detection using ultra-reduced instruction set co-processors”. In: *Design, Automation and Test in Europe, DATE 13, Grenoble, France, March 18-22, 2013*. 2013, pp. 933–938. DOI: 10.7873/DATE.2013.196. URL: <https://doi.org/10.7873/DATE.2013.196>.
- [4] Aravindkumar Rajendiran, **Sundaram Ananthanarayanan**, Hiren D. Patel, Mahesh V. Tripunitara, and Siddharth Garg. “Reliable computing with ultra-reduced instruction set co-processors”. In: *The 49th Annual Design Automation Conference 2012, DAC '12, San Francisco, CA, USA, June 3-7, 2012*. 2012, pp. 697–702. DOI: 10.1145/2228360.2228485. URL: <https://doi.org/10.1145/2228360.2228485>.

SELECTED TALKS

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

SKILLS

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