

Samvit Jain

Curriculum Vitae

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Research Interests

Large-scale machine learning, video analytics, efficient inference, computer vision

Education

2017 - 2019 **University of California, Berkeley**, M.S. Computer Science.

Fully funded, [research Master's](#) program in machine learning and computer systems.

- Member of [RISE Lab](#). Advised by Prof. [Joseph Gonzalez](#). Focus: **large-scale visual inference**.
- Courses: Deep Reinforcement Learning, Advanced Topics in Computer Systems, Computer Vision.

2013 - 2017 **Princeton University**, B.S.E. Computer Science.

Graduated *summa cum laude* (with highest honors) as a member of the Phi Beta Kappa, Tau Beta Pi, and Sigma Xi honor societies. Received Shapiro Prize for Academic Excellence.

- Notable coursework: Distributed Systems, Operating Systems, Artificial Intelligence, Statistics, Computer Architecture, Networks, Security, Functional Programming, Quantum Computing, Quantum Mechanics.

Research Experience

June 2018 - **Resource-Efficient Video Analytics**, *Microsoft Research*.

- Present Reducing compute cost in large-scale video analytics by exploiting learned cross-camera correlations.
- Position [paper](#) accepted to [HotMobile 2019](#). Conference [paper](#) in submission to SIGCOMM 2019.

Sep 2017 - **Efficient Inference on Video**, *UC Berkeley*.

- Present Master's research. Accelerating semantic segmentation on video by exploiting video compression techniques and feature similarity across frames. Papers: block motion-based feature warping (1), corrective fusion (2).
- First-author [paper](#) (1) presented in contributed talk at [ECCV 2018 IWVS](#) in Munich, Germany.
 - First-author [paper](#) (2) accepted to [CVPR 2019](#).

2016 - 2017 **Secure Micropayments**, *Princeton University*.

Senior thesis with CS Professor Brian Kernighan. Developed security protocol and client-server infrastructure to enable paid access of HTTP endpoints, without requiring user login. [Thesis](#).

Spring 2016 **Bitcoin Micropayments**, *Princeton University*.

Research with CS Professor Arvind Narayanan. Built and evaluated prototype implementation of a Bitcoin micropayments-based [system](#) for online content monetization. [Technical report](#).

Spring 2015 **Bitcoin Security**, *Princeton University*.

- Research with CS Professor Edward Felten. Derived and experimentally verified closed-form solution for the optimal threshold on hot wallet storage in a Bitcoin exchange.
- First-author [paper](#) accepted to [WEIS 2016](#) (26% accept rate) and [Journal of Cybersecurity](#) (via invitation).

Professional Experience

Summer 2018 **Microsoft Research**, *Research Intern*, Redmond, WA.

Intern on the [Live Video Analytics](#) team. Mentors: Yuanhao Shu, Ganesh A., Junchen Jiang.

Built and evaluated [ReXCam](#), a novel cross-camera entity re-identification system. [Position paper](#).

Summer 2016 **Databricks**, *Software Engineering Intern*, San Francisco, CA.
Architected full-text search feature backend ([Apache Solr](#)) as a multi-tenant, containerized microservice in [Kubernetes](#). Shipped system to 1000s of live online course participants.
Databricks is a Series E, Andreessen Horowitz-backed big data startup commercializing Apache Spark.

Summers **LinkMeUp**, *Founder/CEO*.
2014, 2015 Developed [video link messaging app](#) for iOS and Android. Components: link sharing, messages and reactions, social integration, push notifications, real-time data updates, session logging and analytics.
Reached [over 1500 users](#) in 70+ countries to date. Roles: Built iOS app (~12,000 lines of [code](#)), web presence, and analytics tools. Hired and managed Android engineer. Led marketing efforts.

Teaching Experience

Spring 2017 **COS 461: Computer Networks**, *Lab TA (Volunteer)*, Princeton University.
Assisted students in developing an HTTP proxy with DNS prefetching in Go.

Projects

Summer 2017 Started [research blog](#) focused on advances in deep learning and data systems. Five posts to date.
Reached [top 15](#) on HackerNews and over 8,000 unique visitors.

Academic Honors

- 2017 **Phi Beta Kappa** – Top 10% of students in graduating Princeton class.
- 2015 **Tau Beta Pi** – Early induction. Top 12.5% of Princeton engineering class.
- 2015 **Shapiro Prize for Academic Excellence** - Top 3.9% of students in Princeton class (2014-15).

Major Awards

- 2012 **AMC 12** – Top 200 in the U.S. in national mathematics competition (60,000 participants).
- 2009 **National History Day Contest** – 1st place in the U.S. for Historical Paper (500,000 participants in 5 categories). Year-long research project.

Papers

- 2018 **Samvit Jain**, J. Jiang, Y. Shu, G. Ananthanarayanan, J. Gonzalez. *ReXCam: Resource-Efficient, Cross-Camera Video Analytics at Enterprise Scale*. In submission. [[arXiv](#)]
- 2018 **Samvit Jain**, Xin Wang, and Joseph Gonzalez. *Accel: A Corrective Fusion Network for Efficient Semantic Segmentation on Video*. To appear at **CVPR 2019**. [[arXiv](#)]
- 2018 **Samvit Jain**, Ganesh Ananthanarayanan, Junchen Jiang, Yuanchao Shu, and Joseph Gonzalez. *Scaling Video Analytics Systems to Large Camera Deployments*. In **HotMobile 2019**. [[arXiv](#)]
- 2018 **Samvit Jain** and Joseph Gonzalez. *Fast Semantic Segmentation on Video Using Block Motion-Based Feature Interpolation*. In **ECCV 2018 Workshop**, Munich, Germany. [[arXiv](#)]
- 2016 **Samvit Jain**, Edward Felten, and Steven Goldfeder. *Determining an Optimal Threshold on the Online Reserves of a Bitcoin Exchange*. In **WEIS 2016**, Berkeley, CA. (26% accept rate.) [[pdf](#)]

Skills

Languages Java, Python, C, Objective-C Familiar: Go, OCaml, Scala, Javascript
Tools git, Linux, MongoDB, AWS, Docker, Kubernetes, Apache Spark, TensorFlow, MXNet, PyTorch