# Souvik Banerjee

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## Experience

**Tudor Investment Corporation** — *Oakland, CA*
*Quantitative Developer: Macro Pipeline* — Nov 2024 - Present

- Quantitative research and development supporting low-latency trading strategies and systems.
- Architected and deployed a distributed system to transmit predictive signals across exchanges, credited with unlocking $10M+ in annual P&L through cross-venue strategy execution.
- Engineered a custom market data ingestion pipeline, streaming compressed packet capture files directly from AWS S3 and eliminating intermediate decompression; reduced annual cloud processing and storage costs by approximately $250,000.
- Built a real-time CME order freshness filter that tracks order IDs via compressed range structures, enabling 10+% improvement in signal space for medium-frequency models.

**Apple** — *Cupertino, CA*
*Senior Software Engineer: Core OS Kernel Technologies* — Sep 2019 - Nov 2024

- Directed engineering effort to integrate ARMv9 Memory Tagging Extensions (MTE) into iOS kernel and firmware.
- Led a team in building core memory, application execution, and device driver subsystems for a next-generation secure OS, architected to leverage advanced hardware security features.
- Architected and delivered new features for third party device drivers on iPad, adding support for custom USB and Thunderbolt devices. Presented at WWDC 2022.
- Designed and implemented core security and stability enhancements for Apple operating systems.

*Software Engineer Intern: Core Kernel* — May 2018 - Aug 2018

- Designed a concurrency bug detection feature using randomized scheduling to identify race conditions in kernel subsystems.

**University of Texas at Austin** — *Austin, TX*
*Undergraduate Researcher* — Aug 2017 - Aug 2019

- Analyzed performance and I/O behavior of Linux filesystems. Presented findings at the UT Undergraduate Research Forum.
- Prototyped new blockchain architectures with a focus on network and storage performance.
- Publications:
  - Ponnapalli, Soujanya, Aashaka Shah, **Souvik Banerjee**, Dahlia Malkhi, Amy Tai, Vijay Chidambaram, and Michael Wei. "RainBlock: Faster Transaction Processing in Public Blockchains." In 2021 USENIX Annual Technical Conference (USENIX ATC 21).

*Teaching Assistant* — Aug 2016 - Dec 2017

- Taught CS 439H Operating Systems Honors, CS 429H Computer Architecture Honors, CS 311 Discrete Mathematics.

**Point72: Cubist Systematic Strategies** — *New York, NY*
*Research Analyst Intern: FX Options Trading* — Dec 2018

- Improved performance of automated trading systems by requesting quotes in parallel using the FIX protocol.

**Citadel Securities** — *Chicago, IL*
*Software Engineer Intern: Low Latency* — Sep 2018 - Nov 2018

- Enabled performance analysis of automated trading systems by creating tools to analyze compiler optimizations.

**Facebook** — *Menlo Park, CA*
*Software Engineer Intern: WhatsApp iPhone* — May 2017 - Aug 2017

- Added new features: Switch seamlessly between voice and video calls, notify contacts when changing phone number.

*Software Engineer Intern: WhatsApp VoIP* — May 2016 - Aug 2016

- Improved reliability and deployment speed for WhatsApp's VoIP relay server, reducing upgrade times by 99%.

## Education

**University of Texas at Austin** — *May 2019*
*B.S. Computer Science Honors, Mathematics* — GPA: 3.989

- **Turing Scholar, Distinguished College Scholar, University Honors**
- Honors Thesis: Implementing Stateless Clients in Ethereum