SWAMINATHAN SIVARAMAN

(631) 428-7552 *github.com/swamintn*
sswaminathan92@gmail.com *linkedin.com/in/swamintn*
Stony Brook, NY 11790 *https://swamintn.github.io*

EDUCATION

Master of Science **Stony Brook University, New York** **Aug 2016 - Present**

- Major in Computer Science, **GPA - 4.0** (Expected graduation - January 2018).
- Coursework - Operating Systems, Artificial Intelligence, Analysis of Algorithms, Database Systems, Parallel Programming, Computational Biology, Visualization.
- Member of the File systems and Storage Lab, working under the guidance of Prof. Erez Zadok on performance analysis of user-space file systems (FUSE).

Bachelor of Engineering **Govt. College of Technology, Coimbatore** **Aug 2009 - Jun 2013**

- Major in Electronics and Communication Engineering; Minor in Computer Science, GPA - 8.83/10.
- Awarded "First class with distinction" title.
- Undergraduate coursework in Computer Science - Algorithms & Data Structures, Operating Systems, C and C++ Programming, Advanced Computer Architecture, Computer Networks, Wireless Networks.

EMPLOYMENT

Performance Architect Intern **Samsung Semiconductor, Inc.** **Jun 2017 - Aug 2017**

- Worked on improving NVMe SSD performance by using an asynchronous polled-mode approach instead of an interrupt-driven one, helping to increase throughput of key-value stores (eg. RocksDB).
- Implemented a user-space RAID layer in the above I/O stack to take advantage of multiple storage devices.

Senior Member Technical **D. E. Shaw & Co.** **Jun 2013 - Jul 2016**

- Helped deliver the High-Frequency Trading (HFT) system of the firm on a monthly release cycle and built robust automation frameworks for testing it, resulting in higher P&L.
- Ran the firm's trading algorithms through test trading systems and analyzed their behavior; debugged and fixed issues in the code (Languages - Python, Java and Perl).
- Owned many components of the trading system and became the point-of-contact for them.

  Projects:
  - **Python API to manage test trading systems:**
    Developed a Python API from scratch to manage test trading systems, replacing the old CLI system. It introduced parallelism, increasing productivity by over 50%, and was used extensively for developing other automation frameworks.
  - **SQL-like query and log parser tool:**
    Created a parser tool to extract queries from SQL-like query logs, replace placeholders with query arguments and run tests, helping reduce manual efforts by 1 day every release week.
  - **Python framework for an order management system:**
    Developed a general-purpose Python framework for the order management system, by connecting to Java processes over RMI and using the existing Java API. Used this to automate trading limit testing, covering over 1000 test cases. The framework was widely used by other teams as well.

SKILLS

- **Languages:** 3 years - Python, Java, Bash; 2 years - C, C++, Perl; 1 year - JavaScript, XML, HTML, CSS, Awk, Latex.
- **Operating Systems:** 3 years - Linux.
- **Technologies:** 3 years - Git; 1 year - CUDA, d3.js, NumPy, RocksDB, PostgreSQL, Eclipse, Jenkins.

TECHNICAL EXPERIENCE

Projects

- **Linux trace file system**. *C, Kernel Programming* *Team of 2*
  Developed a stackable Linux file system that traces and records all filesystem operations, with compact binary-format recording and replay support.
- **Parallel DP algorithms on GPUs with external memory.** *C++, CUDA* *Team of 2*
  Implemented parallel cache-efficient divide-and-conquer dynamic programming algorithms using external memory and GPUs and obtained up to 40x faster runtimes over traditional CPU versions. The external memory component also allows solving problems of very large size that won't fit in RAM.
- **Per-process system call vectors.** *C, Kernel Programming* *Team of 4*
  Added support in Linux for per-process loadable system call vectors (overrides). Also created a new clone system call to inherit parent process's vectors.
- **Xmergesort system call.** *C, Kernel Programming* *Individual project*
  Created a new Linux system call that merge-sorts a given set of files. Reading is done in an efficient manner and features like case-insensitive sorting and ignoring duplicate entries are also provided.
- **Student Feedback Summarizer.** *Python* *Team of 3*
  Developed an application that summarizes student course feedback responses using an unsupervised learning approach based on Integer Linear Programming and Singular Value Decomposition methods.
- **Human Motion Detection and Identification in Videos.** *MATLAB* *Team of 4*
  Built a system that analyses a video stream and identifies and tracks human beings using Adaptive Background Modeling, a Histogram of Oriented Gradients approach and a Support Vector Machine.
- **CHAOS - Cognitive Hand in Automobile Orchestrating Systems.** *C, 8051 MCU* *Team of 3*
  Developed both hardware and software components of a road traffic controller that dynamically allocates signal times based on vehicular load using a self-developed time-scheduling algorithm.

AWARDS

- **Appreciation Award:** Received at D.E.Shaw & Co. for exemplary turnaround time and performance.
- **First Prize, CS Projects:** CHAOS was awarded the first prize at INFOREA, a national-level technical symposium.
- **Central Government Scholarship, India:** Obtained for the entirety of the undergraduate degree.

ADDITIONAL EXPERIENCE

- **Side projects:** Cows-And-Bulls word game (Python), CGPA Calculator (Android app), Map-colorer (Python) and N-puzzle solver (Python).
- **Mentored** two people at D. E. Shaw & Co.
- Got **97.27 percentile** out of 200,000 candidates in CAT, one of India's toughest quantitative exams.
- **External Coursework:** Embedded systems.

OTHER INFO

- **Proficient Languages:** English, Tamil, Hindi.
- **Current Visa Status:** F1 Student Visa.