

Shashank Satish Damodaran

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EDUCATION

Northwestern University

Master of Science (M.S.) in Computer Science | GPA: 3.83/4.0

Evanston, IL

(expected) Mar 2021

Relevant Coursework: Distributed Systems, Databases, Operating Systems, Intensive Program Design, Machine Learning, NLP, Data Science, Social Network Analysis, Statistical Language Modelling, Intelligent Systems (Practicum)

Labs/Groups: Database Systems and Security Research Lab, Northwestern Network & Neighborhood Initiative (N3)

Rajiv Gandhi Proudlyogiki Vishwavidyalaya

Bhopal, India

Bachelor of Engineering (B.E. HONS) in Computer Science & Engineering | GPA: 3.68/4.0

Aug 2015 - Jun 2019

Relevant Coursework: Algorithms, Data Structures, Cloud Computing, Object Oriented Design, Software Development Life Cycle

RELEVANT EXPERIENCE

Quantitative Data Analyst - Institute for Policy Research, Northwestern University

Evanston, IL | Dec 2020 - Present

- Modeled co-evolution of *Chicago Police Department's* official assignment network data (**18MM rows**) with 22 years' of police misconduct data (**CPDP: 43 tables**) via *Goldfish* library in *R* to analyze tie evolution in *Dynamic Network Actor Models (DyNAMs)*.
- Defined and calibrated network boundaries after extensive cleaning and detailed exploratory analysis in *GCP's BigQuery* engine.
- Identified individual, organizational and neighborhood factors responsible for burgeoning misconduct through police networks.

Research Assistant (Databases) - McCormick School of Engineering, Northwestern University

Evanston, IL | Jan 2020 - Present

- Contributed to Prof. Jennie Rogers' NSF-funded **data federation** project : *VaultDB* to securely query distributed hospital data.
- Generated **aggregate operator** functionality in *C++* for the **query execution engine** in both **encrypted and plaintext** settings.
- Developed a robust test harness for *secure multi-party computation* of operators across *TPC-H* benchmark queries over *Postgres*.
- Lead build-pipeline development in *Docker*, aiding **successful deployment** at 5 major participant hospitals in the *Chicago* region.
- Enhanced **query optimizer's** performance by **37%** by operator reordering in *Apache Calcite* following *query plan enumeration*.

Backend Engineering Intern - Practicum LLC

St. Louis, MO (Remote) | Jun - Aug 2020

- Created a **trading platform** for **first-time investors** to learn quant strategies and use algorithms on S&P 500 stocks in **real-time**.
- Conceptualized a solid *schema design* with future *scalability* in mind, engineered it through endpoints in *Flask*, *JSON*, and *MySQL*.
- Translated trading strategies like *Statistical Arbitrage* and *Mean Reversion* to *Python* as a part-time quant developer. Back-tested algorithms on **5 years of daily trade data** from *YahooFinance* API with gains of upto **5.76%** over the naive *buy-hold-sell* approach.

SELECT PROJECTS

RAFT protocol for Consensus and Leader Election

Apr - Jun 2020

- Integrated a **reliable, fault-tolerant**, thoroughly tested **RAFT emulation** to achieve consensus-based leader election in *GoLang*.
- Significantly improved upon a simple *primary-backup KV store*, built atop a **highly distributed** implementation of *Map-Reduce*.

Social Network Mapping of Bali Bombing Terrorists

May 2020

- Scrutinized Bali bombers' network (between '02-'05) in *R* to **statistically model** the formation and dismantling of terrorist cells.
- Predicted missing ties, unidentified recruiters via *ERGM* & fine-tuned autologistic actor model to delineate *terrorist* tendencies.
- Optimized *SIENA* for *longitudinal analysis*, identified relational shifts, and spotted potential (crucial) *canaries* in the network.

Health-centric U.S. restaurant trend analysis

Feb - Mar 2020

- Analyzed **84,962** US restaurants from *Yelp* (state-wise), classifying them on regional cuisine preferences and health metrics.
- Implemented **end-to-end data science pipeline** in *Python*, and enhanced performance of Machine Learning models by **8.745%**.
- Developed *Tableau* dashboard with an elaborate *time-series predictive analysis* to pilot re-opening of restaurants post COVID.

High-availability web server hosting through Fail-over Clustering

Jun - Jul 2018

- Managed **datacenter virtualization** for a *Storage Area Network (SAN)* based **Hyper-V cluster** over an *MS Server-2008 R2 VM*.
- Strategically tested *fail-over* cluster (with *Quorum*) and deployed it on *IIS server* for highly-available cloud services & web apps.

TECHNICAL SKILLS

Languages:	Java (preferred), Python (working proficiency), C++ (low-level dev), GoLang, R
Databases:	PostgreSQL, MySQL, Oracle 10g, MongoDB, SQL Server, CockroachDB, BigQuery
Web Development:	HTML/CSS, Javascript, Flask, API, REST, Postman, JSON, XML, MVC Model, SDLC, IntelliJ, Clion, VSCode
Tools:	Git, LINUX, Docker, VMWare Workstation, Hyper-V, pandas, numpy, sklearn, AWS, GCP, Tableau, RStudio

PUBLICATIONS

- Vishal Shrivastava, Shashank Satish Damodaran & Megha Kamble (2020) *Adalward: a deep-learning framework for multi-class malicious web page detection*, *Journal of Cyber Security Technology*, 4:3, 153-195, January 2020.
 - Presented a **5-layer** deep learning framework to identify and classify malicious websites as spam/phishing or spyware.
 - Hypothesized and verified a set of *supervised models*; achieving an accuracy of **99.76% on 1MM+ web URLs**.

CERTIFICATIONS / ACTIVITIES

- DBMS** (IIT-Kharagpur), **Databases for Data Science** (IBM), **Cloud Computing Associate** (CRISP), **Getting started with CockroachDB**
- Finalist** (6/463) - *Smart India Hackathon* (software edition), 2019; **Winner** - Wireless Robotics (IIT-Kanpur Zonal Round) - 2016