Vishwanath Seshagiri

vishwanath.seshagiri@emory.edu • Website • Distributed Systems Researcher @ Emory

Work Experience

Research Intern @ Katana Graph Inc. May - Aug 2021
Architected, Developed and Deployed a product wide Distributed Tracing System by modifying OpenTracing and Jaeger. Collected traces to improve the query performance across different partitions by 10%.

Instructor @ Emory University Spring 2021
Responsible for teaching, and developing course material for CS130R Introduction to Python Programming Course. Received 80% student satisfaction rating in Course Evaluations.

Teaching Assistant @ Emory University Aug 2019 - Present
CS453 Security in Fall 2019 and **CS326 Algorithms in Spring 2020**

Python Developer @ UMM Digital Sep 2018-Jun 2019
Worked as a Python Developer for Review Management Platform called Zceppa that leverages reviews aggregated using Facebook Graph API, Google MyBusiness API and 10 other platforms. Created the architecture for the API based on Microservice Architecture Principles, and developed the Data Pipelines using Celery with RabbitMQ Backend. Scaled the system to handle 100+ small businesses.

Backend Developer @ Warhorse Education Pvt. Ltd. Aug 2017-Jun 2018
Worked as a Backend Developer for Internal Online Systems of Warhorse. Implemented Collaborative Filtering based Recommender System for Test Taking Module. Structured the Coding Course taught to Students. Used Python Library Surprise, Word2Vec Models, and borrowed concepts from Computational Pedagogy for building the Test Taking Module.

Research Trainee @ WARAN Research Foundation July 2015 - March 2016
Worked on simulator for benchmarking High Performance Computing Systems. Implemented various Graph Algorithms such as SVD, LUD in C++. Worked with Shared Memory and IPCs in Linux for achieving the same.

Education

Emory University 2019 - Exp. 2025
PhD in Computer Science @ SimBioSys Lab. *PIs: Dr. Ymir Vigfusson, Dr. Avani Wildani*

College of Engineering Guindy, Anna University 2014-2018
B.E. Computer Science and Engineering.

Projects

Designing Multi-Tier Caches for Storage Cache RESEARCH
Worked on a framework to design the optimal multi-tier storage cache for a given budget, and workload. Decreased the latency for certain workloads by 60%. Maintaining the Multi Tier Simulator developed at SimBioSys. Writing enhacements for Facebook's CacheLib to admit objects to NVM, before moving it to DRAM.

Workload Clustering for Storage Optimisation Poster/WiP Talk
Found effective ways for clustering block level traces for storage optimization. Increased Cache Hit Rate by 5% for MSR Workloads. Appeared in FAST'20 as WiP Talk.

Characterizing Design Patterns in Microservices RESEARCH
Characterizing best practices and challenges in Microservice domain to create a realistic Microservice benchmark. Interviewed and Compiled results from 12 participants with focus on expanding to more participants. Collaboration with Tufts University.

Impact of Threading Models in Microservices RESEARCH
Developing a benchmark using Apache Thrift for understanding the impact of threading models on Microservices. Working with Dr. Francis Yan (MSR) and Dr. Akshitha Sriraman (CMU).

TweetIt: ***Analyzing Topics for Twitter Users to garner Maximum Attention*** RESEARCH
Obtained the Tweet Data based on the Hashtag, and profiled it to understand the psyche of the user.Wrote an indexing algorithm for clustering the user profiles based on similar topics in their tweet. Code: GITLAB

Hippo: ***Hippocampus Simulator*** RESEARCH
Wrote a Hippocampus Simulator, in Python using Numpy and PyTorch. It replicated the pattern completion and separation taking place in the Human Hippocampus. Implemented the Pre-Integration and Lateral Inhibition taking place in Dentate Gyrus, and interfaced it with Hopfield Networks. We showed 38% increase of storage capacity and 15% decrease in the error tolerance. Code: GITLAB

Dalalbull: ***A Fuzzy Logic Based Stock Market Simulator for Behavioural Analysis*** PROJECT
Built the application in Python (Flask) with Redis DB. Wrote an algorithm for generating the news based on Fuzzy Logic and used Weiner Process to determine the price fluctuations of a stock at any given point of time. Scaled the system to handle 500 concurrent requests. Code: GITLAB

Multi Instrument Music Track Generation Using GANs Bachelor Thesis
Implemented a GAN for Music Generation based on MuseGAN. Optimised the code base for handling 4/4 beat patterns. Used Lakh Midi Dataset for training.

Publications

- Vidya Janarthanam, V., **Vishwanath, S.**, Shanthi, A.P. *A biologically plausible network model for pattern storage and recall inspired by Dentate Gyrus.* Journal of Neural Computing and Applications. 2020.

Skills, and Tools

- **Tools & Platforms:** Python, C++, Docker, AWS, Azure, Linux, OpenTracing, Jaeger, Kubernetes, Jenkins, Terraform, Consul, Jaeger, Facebook Graph API.
- **Interests:** Distributed Systems, DevOps, Operating Systems, Microservices, Graph Databases.