Prateek Garg

Morgan Stanley
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Research Interests

Query Processing & Optimization on Large Scale Data Sets, Non-volatile Database Systems, Knowledge Discovery, Knowledge Representation & Automated Reasoning

Education

Indian Institute of Technology Bombay, India
M.Tech - Computer Science & Engineering — July'13 - Jul'15
Thesis: Performance Enhancement of Big Data processing in Hadoop Distributed File System

Shri Mata Vaishno Devi University, India
B.Tech - Computer Science & Engineering — Aug'08 - May'12
Thesis: Quantitative Steganalysis of JPEG Images
Chancellor's Gold Medal, University Silver Medal, Award for Excellence

Experience

Morgan Stanley
Analytics, Intelligence & Data Technology — Aug'15 - Present

Analytics Hub

Big-Data analytics systems that enable Financial Advisors (FAs) to run analysis over 30+ million clients' accounts & holdings leveraging Hadoop, Hive, Apache Spark & Apache Solr.

Unified Order History

Analytics systems to enable Financial Advisors to track and monitor orders placed at Stock Exchanges for clients leveraging Hadoop, Hive, Apache Solr & Apache Spark

Next Best Action

Recommendation system, using machine learning models, for FAs for opportunities of investments/interactions based on the financial market history, client's history and client's long-term/short-term goals

Virtual Assistant

Proof of Concept for an automated question-answer system for FAs based on information retrieval from large a corpus of unstructured data (using Apache Spark) to provide answers to queries targeting "How do I.."

Indian Institute of Technology Bombay, India
Teaching Assistant
Computer Programming & Utilization — Jul'14 - Jun'15
System Administrator — Jul'13 - Jun'14

Publications

Prateek Garg, DB Phatak, "**Optimization Techniques for Heterogenous Hadoop Distributed File System**" Accepted for publication in IEEE International Conference on System Modeling & Advancement in Research Trends, SMART2019.

Prateek Garg, M.L. Garg, "**Production Rules Based Inferences Using Fuzzy Petri Nets**" Communicated for review and publication to Elsevier Journal of Information Processing Letters

Research Internships

Indian Institute of Science, India
Quantitative Steganalysis of JPEG Images — Mar'12 - May'12
Advisor: Prof. K.R. Ramakrishnan
Developed & implemented a package to quantitatively estimate the amount of data hidden in stegnographed images with modifications as small as 10% to DCT coefficients.

Video Based Traffic Analysis for Vehicle Tracking & Counting (Using Optical Flow) May'11 - Jun'11

Advisor: Prof. K.R. Ramakrishnan

Leveraging optical flow, implemented an automatic video based traffic analysis system that detects and tracks vehicles driving through a controlled area.

Academic Projects

Performance Enhancement of BigData Processing in Hadoop Distributed File System

Advisor: Prof. D.B. Phatak

Both the homogeneity and data locality assumptions in Hadoop are optimistic at best and unachievable at worst, potentially introducing performance problems in data centers. This dissertation explores the Hadoop data placement policy in detail and proposes a modified block placement policy that increases the efficiency of the overall system

Table Partitioning for Parallelism

Advisor: Prof. S. Sudarshan

Extended syntactic implementation of PostgreSQL-9.2, in context of parallel databases, to support table partitioning to handle multiple related tables. Tables on remote servers, linked to master table by referencing foreign key, are partitioned on-the-fly based on partitioning of master table

Raft, a Consensus Algorithm in Distributed Systems

Advisor: Prof. Sriram Srinivasan

Implemented Raft, a consensus algorithm for managing replicated log in Distributed Systems using Go Language. Implementation includes leader election, log replication along with sustainability against dynamic crashing of functioning servers and addition of new servers

Virtual Time in Distributed Systems' Testing

Advisor: Prof. Sriram Srinivasan

Studied and analyzed approaches for using time as a resource to build test infrastructures for cloud that deploy lesser magnitude of hardware resources than the target systems

Real Time Smart Meter Data Visualization

Advisor: Prof. Krithi Ramamritham

Developed a system to visualize smart meter data in real-time for analysis to reduce energy footprint

Relevant Coursework

Indian Institute of Technology Bombay

Advanced Distributed Systems - Engineering a Cloud, Implementation Techniques for Relational Database Management Systems, Algorithms and Complexity, Artificial Intelligence, Information Retrieval & Mining for Hypertext and the Web, Machine Learning (Audit)

Shri Mata Vaishno Devi University

Computer Organization and Architecture, Engineering Mathematics, Artificial Intelligence, Neural Networks,

Scholastic Achievements

1. For excelling in academics, awarded with Chancellor's Gold Medal, University Silver Medal Award for Excellence by Vice President of India
2. Secured 1st rank in University during Bachelors in Computer Science & Engineering.
3. Awarded, twice, with fully paid Summer Research Fellowship by Indian Academy of Sciences, Bangalore on All India basis for conducting research work at IISc, Bangalore.
4. Full Fee waiver as a Merit Scholarship for entire B.Tech. study at SMVD University.
5. Secured All India Rank of 90 [99.96%-ile] out of approx. 224,000 candidates in GATE-2013.