Hemant Kumar Singh

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Education

Master of Computer Science(Big Data Systems) Graduating May 2021
Arizona State University, Tempe, Arizona GPA: 4.0/4.0
Relevant Courses: Distributed Database Systems, Database Internals, Data Mining, Natural Language Processing

Bachelor of Technology - Computer Science & Engineering Graduated May 2013
SASTRA University, Thanjavur, India GPA: 8.83/10.00
Relevant Courses: Data Structures, Algorithms, Operating Systems, Distributed Systems

Technical Skills

Programming Languages & Paradigms	: Java, Python, OOPs, TDD
Data Engineering	: SQL, Lucene, Elasticsearch, Redis
Web Development	: HTML, JavaScript(beginner), Java Servlet
Software Development Tools	: Git, IntelliJ, PyCharm
Others Tools & Frameworks	: Alteryx, Protobuf, JavaCC, pandas

Professional Experience

Software Engineer Intern June 2020 – July 2020
Dell Technologies Arizona, USA

– **Data storage devices event data analysis** [Alteryx, SQL, pandas, Python]

- Identified important missing information and gaps in the existing devices event data of PowerEdge, Isilon, PowerOne, PowerMax, and PowerFlex using SQL & Alteryx.
- Used K-Means and DBSCAN clustering to create & analyze event clusters and proposed data changes to improve clustering accuracy.
- Identified event sequences that are most prevalent and lead to frequent system outages. Also proposed new data & event changes for predictive maintenance to reduce system downtime.
- Collaborated virtually with teammates working from varying timezone, successfully completed the project, and presented our work to key-stakeholders.

Member Technical Staff (Software Developer) June 2013 – July 2019
Zoho Corporation Chennai, India

– **Multi-module search implementation for ServiceDesk Plus** [Java, Elasticsearch, JavaCC, Tomcat]

- Implemented normalized(table-wise) indexing and searching algorithm which reduced the database join query load by 22%.
- Proposed and developed a natural language search feature to make it easier for the user to search.
- Implemented various entity extraction techniques which improved the recall of the search results by 15%.
- Developed configuration based application data indexing framework. It helped reduce the number of search-related software patch request by 85%

– **Federated search RESTFul API** [Java, Servlet, REST, Protocol Buffer, HttpComponents]

- Revamped existing federated search API and developed RESTful implementation for the same.
- Introduced modular design in API and data layer to reduce time to integrate a new Zoho service in Zia Search from 30 days to 15 days.

– **Search and indexing performance enhancement** [Java, Elasticsearch, Redis, MySQL, Protocol Buffer]

- Improved search server performance by incorporating techniques like object caching, connection pooling, index request queuing, index warming, and binary(Protobuf) API response.
- With these improvements, the server could handle 1.4x indexing requests and also search response time dropped by more than 11%.

Academic Projects

Disease Search By Symptoms - Healthcare Websites Mining Spring 2020

- Developed web crawlers to scrap structured data from healthcare discussion forums and drug reviews websites.
- Created Java web application and *REST API* endpoints for data indexing and searching.
- Improved search accuracy by more than 9% by incorporating information extraction technique (NER) and Bio-medical synonyms.
- Collaborated with other team members to successfully deliver project milestones on time.

Bigtable database implementation using Relational DBMS Spring 2020

- Extended Minibase persistent Heapfile and Tuple data structures to implement Bigtable maps.
- Leveraged in-memory data structures to optimize batch insertion and minimized disk-page access significantly.
- Optimized Heapfile page layout and B+ Tree index structure to support flexible data clustering and querying.

Multimedia information retrieval system Fall 2019

- Implemented image feature extraction, mapped images to multi-dimensional vector space for image similarity computation.
- Improved image search performance by 30% by implementing *Dimensionality Reduction* techniques.
- Implemented relevance feedback using *Personalized Page Rank* in the image retrieval system.

Awards and Achievements

- Received *Engineering Graduate Fellowship* in recognition of academic achievements at Arizona State University – June 2020.
- Awarded with SASTRA University Dean's merit scholarship twice for being among the top 5% throughout the university in the academic year 2011-12 and 2012-13.
- Won bounty for discovering multiple security vulnerabilities in Zoho enterprise applications – 2018.