

# Vibhor Tyagi

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## EDUCATION

- **University of Illinois at Urbana-Champaign** Urbana, IL  
*Master of Science - Computer Science; Score: 4.0* Jan 2024-May 2025(Expected)
- **SRM Institute of Science and Technology** Chennai, India  
*Bachelor of Technology - Computer Science and Engineering; Score: 87.4%* July 2017-June 2021

## WORK EXPERIENCE

- **Graduate Research Assistant** March 2024 - Ongoing  
*University of Illinois Urbana-Champaign*
  - Automated data collection for sustainability research using Selenium and Scrapy, targeting companies' carbon emissions and regulatory compliance.
  - Engineered and optimized ETL workflows with Apache Airflow and Apache NiFi, ensuring efficient data integration and accuracy for large datasets.
  - Utilized Apache Spark and Kafka for high-performance, scalable processing and analysis of extensive datasets, focusing on the impact of environmental regulations on corporate carbon footprints.
- **Data Automation Engineer 2** September 2021 - June 2023  
*PricewaterhouseCoopers*
  - Orchestrated end-to-end automation for various Fortune 500 companies using ETL pipelines, cloud dashboards, ML model deployment, and RPA bot creation resulting in major cost savings and operational efficiencies
  - Led a team of 8 in designing and developing robust RPA models using Python, UiPath, Power Automate, and Power Apps, achieving a reduction of over 10,000 manual work hours annually.
  - Implemented ETL pipelines with Apache Airflow, Alteryx Designer, and PowerBI, integrating with Tableau for actionable insights. Enhanced data-driven decision-making, leading to up to 18% expense reduction for clients.
  - Constructed predictive and classification models using machine learning and deep learning frameworks to forecast costs and expenses, contributing to a 16% improvement in strategic financial planning and resource allocation.
  - Developed impactful visualizations and optimized SQL queries, reducing database response time and contributing to an 8% increase in client engagement, as evidenced by enhanced click-through rates and user interactions.
- **Undergraduate Research Assistant** Jan 2021 - May 2021  
*SRM Institute of Science and Technology*
  - Spearheaded the implementation of a cutting-edge movie recommendation system leveraging K-means, collaborative filtering, and SVD, resulting in significantly enhanced personalized content delivery.
  - Improved system sparsity and accuracy through innovative use of implicit and explicit feedback mechanisms, coupled with Association Rule Mining.
  - Optimized key metrics including precision, recall, and F-measures, leading to substantial improvements in recommendation quality.

## SELECTED PROJECTS (2/5)

- **Real-Time Data Pipeline for E-commerce Analytics**
  - Designed and implemented a robust pipeline using Apache Airflow for orchestration, Apache Kafka for data streaming, and Apache Spark for real-time processing, handling millions of transactions daily with fault tolerance and scalability.
  - Employed Cassandra for distributed storage and PostgreSQL for structured data warehousing, optimizing indexing and partitioning strategies to reduce data retrieval latency by 30% and enhance query performance.
  - Utilized Docker for containerization and Kubernetes for orchestration, ensuring consistent deployment across environments. Automated CI/CD pipelines, cutting deployment times by 25% and minimizing manual intervention.
- **Advanced Text Analytics for Sentiment and Topic Modeling**
  - Utilized BERT for sentiment analysis, achieving a 92% accuracy on benchmark datasets, significantly improving customer sentiment analysis capabilities.
  - Applied LDA to identify key themes and trends from large text corpora, enhancing content categorization and recommendation systems.
  - Deployed models on AWS SageMaker using Docker for scalable, low-latency predictions. Developed interactive dashboards with Plotly and Dash to visualize sentiment trends and topic distributions, providing actionable insights.

## SKILLS SUMMARY

- **Languages / Database Management:** Python, C, C++, Java, SQL, R, MySQL, PostgreSQL, MongoDB, NoSQL, Cassandra
- **Big Data Technologies / Data Warehousing:** Apache Hadoop, Airflow, Spark, Kafka, Hive, Amazon Redshift, Google BigQuery
- **Cloud Platforms / Low Code Tools:** AWS (S3, EC2, Sagemaker, Lambda), Alteryx Designer, Power Automate, UiPath, Power Apps
- **DevOps / Version Control:** Docker, Git, Github
- **Python Frameworks:** Numpy, Pandas, Scikit, NLTK, TensorFlow, PyTorch, Keras, Matplotlib, Seaborn, Plotly, PySpark, Shiny, Streamlit

## PUBLICATIONS

- **IEEE Published Paper :** <https://ieeexplore.ieee.org/document/9395759>
- **Conference:** Presented the paper in International Conference on Artificial Intelligence and Smart Systems (ICAIS 2021)