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Varun Tulsian

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My Blog, wity'AI

Summary:

As a highly skilled and experienced Machine Learning Engineer with a proven track record of success, I have a strong background in developing and implementing AI and machine learning solutions for both large corporations and startups. In my most recent role as a Lead at Walmart, I led a team of ML engineers to deliver content-based recommendation solutions using deep learning techniques, resulting in increased revenue of $20M and improved business outcomes for sellers. I am a graduate of the prestigious Indian Institute of Science and have expertise in a range of areas, including generative AI, NLP, deep learning architectures, VAE's, topic modeling, recommender systems, and search. I have made significant contributions to the field through my published research, which has received 147 citations, and have consistently received top performance ratings throughout my career.

Work Experience:

Professional development, Sabbatical, Bangalore   **Oct 2022-Present**

I have taken a career break to focus on my interests in deep learning and generative AI, and have been actively pursuing personal projects and continuing my education in these areas. My recent work can be found here.

Walmart Labs, Bangalore   **Apr 2020-Sept 2022**

Senior Manager I, Data Science, Walmart Search Marketplace
Led ML Teams, building AI driven insights using NLP, deep learning, & Spark to create insights for **100K Sellers & 60M products**.

- Content Recommender System, used by **7K Sellers on 400K products** to improve product discoverability. Utilizing sentence transformers, Pos-Tagging & Statistical techniques to identify high impact keywords for products.
- With my team I delivered Assortment Recommendations, helping Walmart procure products that drove **$20M** sales, using semantic search embedding algorithms, Approximate Nearest Neighbour, & Solr to find Assortment Gap queries.
- I Drove Business growth by improving search conversions by **61 basis points,** by developing relevance and ranking algorithms using Multi-objective Learning and Click based features for ranking.

Other Work: Semantic Search Ranking using Bi Encoder deep NN (using attention based techniques), Graph based embedding, Spam Identification, Attribute impact insights, Semi-Supervised Learning, Taxonomy Matching using transformer based model to encode product title, Stakeholder Management, Leadership, and Mentoring.

Sensara Technologies (AI Startup)   **June 2019-Apr 2020**

Staff Data Scientist, Content Personalization
Creator of the Content Personalization Platform that powered the "+You Page" and all recommendation modules on the Sensara Apps and delivered recommendations to partner companies like Xiaomi and Airtel.

- Created User embeddings, and content embeddings using watch times and Sensara's proprietary Knowledge Graph. Online Learning algorithm, using SSDb that incorporates user recent events to deliver real time recommendations. Experimented with Transformer based cross-encoders.
- Personalization platform from **real-time** log events **(1 million events/hour at the peak)** for **300K+ users** (Airtel and MI TV users) watching content on TV streamed and parsed using distributed processing system Flink and cached using SSDb.

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Walmart Labs, Bangalore

Aug 2013-May 2019

Staff Data Scientist, Walmart Search

Lead and key contributor, delivered products in Walmart Grocery, Sam's Club and Walmart.com Search ranking teams.

- **Grocery: CNN** models for intent understanding, and attribute understanding to improve product relevance in search.
- **Sam's: Hierarchical Bayesian models** for reorder based personalization on Search ranking for members and offline algorithm performance benchmarking. Drove search business conversions by over **1%.**
- Models to optimize conversion using **Click-Stream** based to improve Search ranking. **Product Orders/user lift +1.9%.**

Other Work: XGBoost Ranking for Grocery business, Related Searches using Markovian Graphical models, Spell correct and Typeahead system for search, Merch modules ranking and platform for Walmart.com.

Jan 2013-March 2013

Microsoft Research, Bangalore (Intern)

Worked with leading researchers in the Software verification area on algorithm Selection for spec checkers used by Windows.

PUBLICATIONS:

1. MUX: Algorithm Selection for Software Model Checkers (Published in **MSR, Hyderabad**) **31 citations.**
2. MintHint: Automated synthesis of Repair Hints (Published in **ICSE** - **A* conference**) **116 citations.**
3. Multi-Objective Learning: Label aggregation approaches for Learning to Rank in E-commerce.

ACHIEVEMENTS:

- **AIR 8** among 136K, 100 percentile in **GATE 2011 Computer Science Exam.**

Indian Institute of Science, Bangalore   **Aug 2011-Jul 2013**

- Masters in Engineering (ME) in Computer Science with CGPA of **6.8/8**. Top 10 percentile at IISc.

Walmart Labs, Bangalore

- Twice **Role Model** rating on performance in 2017 & 2018. Top 5-7 percentile based on performance in Walmart.
- **Conference Presentation** -- Solution to Reorder-Based Personalization for Sam's Club at Walmart.