

# GAURAV SOOD

## Sr. Data Scientist

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Bangalore, India

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*"Senior Data Scientist with 7 years of experience in Data Science and total experience of 14 years in software industry, contributed as an individual contributor and team leader, building machine learning models from conception to completion to improve operational efficiency. Worked on Natural Language Processing, Time Series Forecasting, Tabular Datasets. Experienced in traditional machine learning methods (Probabilistic Graphical Models), deep learning models (LSTMs, CNNs), Transformer based models (BERT, GPT and LLMs), Graph Neural Networks and Reinforcement Learning"*

## SKILLS

Python

PyTorch

TensorFlow

JAX

Julia

Flux/Lux

NumPy

SciPy

Matplotlib

Large Language Models

Generative AI

Probabilistic Modelling

Reinforcement Learning

Time Series Forecasting

Communication

Leadership Skills

## EXPERIENCE

### Sr. Data Scientist

**HP Inc. May 2021 – Ongoing**

Bangalore, India

- Created Large Language Models(LLMs) Based application for webpage content filtering and topic recommendation, adhering to key NFRs which helped in achieving **Net Promoter Score of 65** during beta testing of HP's PrintAI program
- Benchmarked LLM based application's performance on accuracy, cost(token usage) and latency, comparing OpenAI, Llama and Mistral, reducing cost by **30%**.
- Mentored **3** data science interns on automated triaging using Graph Neural Networks and LLMs, completed within an expedited time frame of **2 months**
- Supervised Small Language Models(SLMs, less than **3B** parameters, **4bit** quantized) exploration and **instruction fine-tuning** initiatives using PEFT achieving an accuracy of **95%**
- Created Telemetry data analysis pipeline processing **0.5** million customer record using LLM embeddings, BERT, dimensionality reduction(UMAP, Variational AutoEncoder) and clustering HDBScan, enhancing operational efficiency by **20%-30%**.

Prompt Engineering

GPT2

TinyLlama

FineTuning

Embedding Models

Graph Neural Networks

### Sr. Software Engineer Machine Learning

**HP Inc. July 2017 – May 2021**

Bangalore, India

- Analyzed the effects of key macro economic indicators on long and short term forecasts of product sales data which helped in achieving on-time delivery rate of **90-95%**, working with HP's Digital Transformation Office across US and Brazil
- Implemented Hyperparameter Tuning module for Time Series models using Optuna reducing the AutoML framework execution time by **20%-25%**
- Worked on HP Personal Systems User Behavior Modelling using Tree Based Models, SHAP, UMAP, HDBScan for targeted market campaigning
- Developed simulator environment for online Reinforcement Learning for automated hardware diagnostics, as an alternative to Sequence Based Modelling
- Mentored **4** interns on Sequence Tagging Models using BERT, LSTMs, Conditional Random Fields for discovering insights in call center records which lead to **25%-30%** increase in operational efficiency.

- Presented and communicated ideas about Probabilistic Modelling and Reinforcement Learning to senior leadership
- Analyzed **0.1 million** call center record using Bayesian Networks for predictive diagnostics as an aid to call center executives and evaluate their decision making process

Time Series Analysis

CART

Reinforcement Learning

Probabilistic Graphical Models

Data Annotation

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## Senior Software Engineer

**HP Inc. March 2015 – June 2017**

📍 Bangalore, India

- Created a parser for PostScript Language to extract images and meta data which was impacting **50000** hp customers and saving **\$0.5 million**
- Worked on understanding PDF specification, design and implemented PDF document processing using PDF libraries like iText and PDFium which helped in saving annual licensing cost of **\$10,000**
- Lead a team of **4** software engineers which delivered imaging processing solutions using Python Imaging Library, Tesseract OCR to over **10 Public sector banks across India**

Algorithms

OpenSource Software

Image Processing

Leadership Skills

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## Software Engineer

**HP Inc. May 2010 – Feb 2015**

📍 Bangalore, India

- Designed and Implemented Telemetry module in python using asyncio which enabled the collection of data across **1 million** devices used by hp customers
- Collaborated with **7** software engineers on open source software used by **1 million** customers worldwide (<https://developers.hp.com/hp-linux-imaging-and-printing>)

Python

Open Source Software

Asynchronous Programming

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## PREVENTIVE DISCLOSURES

- Gaurav Sood, Ranjith Kumar Gopa, Nandan Kumar Nidhi(May 2024) "Representing Tabular Data using Large Language Models" [https://www.tdcommons.org/dpubs\\_series/6998/](https://www.tdcommons.org/dpubs_series/6998/)
- Gaurav Sood (Feb 2021) "A Reinforcement Learning Approach to Printer Diagnostics" [https://www.tdcommons.org/dpubs\\_series/4244/](https://www.tdcommons.org/dpubs_series/4244/)
- Gaurav Sood, Pavleen Kaur Brar, Raghu Anantharangachar (April 2019) "Sequence Prediction for Print/Scan Issues using Bayesian Networks" [https://www.tdcommons.org/dpubs\\_series/2117/](https://www.tdcommons.org/dpubs_series/2117/)

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## CERTIFICATIONS

### Deep Learning Specialization

**Coursera Oct-2021 Credential ID G8PG2GY6WFS)**

### Reinforcement Learning Specialization

**Coursera Sept-2021 Credential IDD3LDNU8BRW68**

### Introduction to Quantum Computing

**Coursera May-2021 Credential ID RXQHLEC2WYC8**

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## EDUCATION

### MSc Research Speech Recognition

**Indian Institute of Science Bangalore 2006-2009**

- 📖 Speech Recognition using Support Vector Machines

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### BTech Electronics and Communication Engg

**GNE Ludhiana 2001-2005**