MANTEJ SINGH GILL

Machine Learning Engineer

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SKILL SET

Machine Learning Algorithms
Data Analysis
Model Development
Feature Engineering
Predictive Modeling
Experimentation
Data Interpretation
Model Deployment
Project Management
Team Collaboration
Problem Solving
Technical Leadership
Communication
Research
Algorithm Optimization

TECHNICAL SKILLS

Python, NumPy, Pandas, Scikit-learn, SciPy, Statsmodels, Dash, Flask, FastAPI, Streamlit, Dask, Natural Language Processing (NLTK, Spacy, Genism), Deep Learning (Tensorflow, PyTorch, Keras), Data Visualization (Matplotlib, Seaborn, Plotly), Time-series Forecasting (Prophet, ARIMA)
Big Data Technologies (Hadoop, Spark)
Version Control (GitHub and SVN)
CI/CD (GitHub Actions, Jenkins)
Jupyter Lab for experimentation tracking
Cloud Services (AWS, GLCP)
Containerization and Manageability (Docker, Kubernetes)
SQL, NoSQL Databases (Elasticsearch, MongoDB, Clickhouse, Prometheus)
Model Serving (BentoML, TensorFlow Serving, FastAPI)
Model Evaluation & Tuning
Collaborative Filtering
Dimensionality Reduction
Anomaly Detection

CAREER HIGHLIGHTS

- **8 patent filings:** https://mantejgill.com/#projects
- Recognized by HPE's Office of the CTO and Intellectual Property team for exceptional innovation contributions
- Reviewer for HiPC conference 2023

Experienced Senior Machine Learning R&D Engineer with over 5 years at Hewlett Packard Enterprise. Proven expertise in developing data-centric algorithms to enhance machine-learning pipeline reliability. Holds 8 patents, including innovations in power consumption prediction, time series segmentation, and model compression. Proficient in data science applications, predicting maintenance times, optimizing workload scheduling and NLP recommenders. Well-versed in time-series research encompassing forecasting, compression, and segmentation. Adept in Machine Learning and Data Engineering, adeptly streamlining ML workflows, building robust data pipelines, and facilitating big data processing. Demonstrated capabilities in previous roles as a Machine Learning Engineer and R&D System Engineer, delivering tailored customer facing products and refining data processes.

PATENT FILINGS

- Identifying hotspots and coldspots in forecasted power consumption data in an IT data centre for workload scheduling
- Unsupervised segmentation of a Univariate Time series dataset using Motifs, Shapelets and Anomalies
- Compression of a univariate time series dataset using motifs
- An approach to predict Firmware and Software Components' Maintenance time window in HPE Servers
- An improved forecasting algorithm for Power and CPU data of a server
- A data-centric approach to Model compression
- An analytical method to improve the life of an SSD drive in a server
- Improved ensemble forecasting algorithm using time-series data sampled at multiple intervals

PUBLICATIONS

- Harshith, J., **Gill, M. S.**, & Jothimani, M. (2023, August 24). Evaluating the Vulnerabilities in ML systems in terms of adversarial attacks. arXiv.org. https://arxiv.org/abs/2308.12918v1
- Harshith, John and **Gill, Mantej Singh** and Ghosh, Arup, Unsupervised Learning Approach for Grouping Trajectories (August 24, 2023). Available at SSRN: https://ssrn.com/abstract=4551038 or http://dx.doi.org/10.2139/ssrn.4551038

WORK EXPERIENCE

Senior Machine Learning and R&D Engineer ▶ Hewlett Packard Enterprise, Bangalore, Jan 2021 – Present

- Data Science use-cases
  - Predicting maintenance time for Firmware updates on HPE Servers
  - Workload scheduling using forecasted power supply data of a server
- Research themes
  - Working on exploring time-series data generated from a server (CPU, Power, Memory data) and actively researching the following themes:
    - Forecasting of time series – For Reliable Predictions (Univariate, Multivariate, Ensembles)
    - Time-series Data and Model compression - For Cost-Effective Storage
    - Time-series Segmentation - For Interpretable Models
- Machine Learning Engineering
  - Servicing ML models using BentoML and Yatai
  - Setup end-to-end workflow of ML life cycle using frameworks like MLFlow and Kubeflow
  - Adopting HPE Ezmeral for deploying and managing containerized Machine Learning applications
- Data Engineering
  - Worked on setting up Data Lake and Data pipelines on HPE Harmony (AWS + Apache Spark-based platform)

Subject Matter Expert – Machine Learning ▶ Interview Kickstart, Bangalore, Aug 2023 – Present (Part-time commitment)

- **Speaker** at Virtual and Augmented Reality at Unity-Dev 2K16 VIT Vellore

AWARDS & ACCOLADES

- **Innovation Quest** HPE Worldwide 2023 Finalist
- **1st Place**, Hackathon for HPE Compute India
- **Special Achiever Award** VIT University
- **NASA Space Apps Challenge 2017:** People's Choice Award (India Winner, Global Nominee): https://2017.spaceappschallenge.org/challenges/ideate-and-create/space-jockey/teams/kepler
- **Featured** Project at 'Hackster.io' and ' Arduino 101 - Invent Your Future!: https://www.hackster.io/blitzkrieg/j-a-r-v-i-s-a-virtual-home-assistant-d61255
- **1st Place**, We@DS Hackathon 2017 Siemens India
- **Best Project** in School of Computer Science, Engineers' Day 2015, VIT University
- **Gold Medal, Delhi Public School R.K Puram** | Gold Medal is awarded to student for academic excellence for 7 consecutive years.

EDUCATION

- 2022: Micro masters in Statistics and Data Science | Massachusetts Institute of Technology, Cambridge, MA, USA
- 2018: BTech: CSE | VIT University, Vellore, India
- 2014: CBSE Class 12 | Delhi Public School R.K Puram, India

Languages Known**:** English, Hindi & Punjabi

- Deliver live sessions on various topics in Machine learning.
- Constantly improve the session flow and delivery by working with other instructors and subject matter experts.
- Have regular discussions with IK's curriculum team in evolving the Machine learning Curriculum.

Machine Learning and R&D Engineer ▶ Hewlett Packard Enterprise, Bangalore, Jan 2019 – Dec 2020

- Data Science use-cases
  - Recommending customized Customer advisory alerts to HPE server customers (NLP+Ranking)
- Machine Learning Engineering
  - Developed CI/CD/CT workflows for faster and more robust deployment
- Data Engineering
  - Developed scripts to handle and process big data from Hadoop HDFS
  - Developed a python-based platform to execute and monitor Hive scripts from NIFi for refinement of incoming data in the data lake
  - Developed NiFi flows for big data pipelines
  - Developed scripts to anonymize sensitive customer big data

Research and Development Systems Engineer ▶ Hewlett Packard Enterprise, Bangalore, Jul 2018 –Jan 2019

- Automation Development
  - Designed and developed a tool that performs functional testing of HPE storage devices (Controller, Backplane and Expander).
  - Designed and developed a tool that automates HPE Smart Components building and release.
  - Customized various flavors of Red Hat Enterprise, SUSE Linux Enterprise server and Windows ISO for auto deployment on HPE Bare Metal servers.
- Firmware Development
  - Worked in a team to develop software that handles discovery, flashing and validation of HPE Storage Smart Components (drivers, firmware, and applications).

Project Intern ▶ Hewlett Packard Enterprise, Bangalore, Jan 2019 – Dec 2020

- Data Analysis and Machine learning
  - Developed an end-to-end POC project to gather, parse and predict various failures of server components based on HPE server logs
  - Implemented multiple machine learning algorithms to predict the failure of storage (disk, controller) and performance (CPU) components
  - Received an award for 2nd best internship project among 100 projects

Summer Intern ▶ Deloitte India, Gurgaon, Jun 2016 – Aug 2016

- Data Analysis
  - Utilized Tableau to :
    - Highlight telecom hotspots from customers' meta-data of call records
    - Perform Forensic analysis (highlight red flags) in company's internal audit datasets
  - Developed VBA scripts to highlight potential red flags (fraudulent transactions) in real-time digital payment data
- Android App development
  - Developed an android app for fast and foolproof auditing of telecom equipment in cell towers
  - App features included digital signing, OCR for inventory, and GPS based verification