Lavanya Bharani

Machine Learning Engineer | Data Scientist

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Education

Tufts University — Medford, MA
Master of Science in Data Science — *Graduated: Aug 2025*

University of Alabama at Birmingham — Birmingham, AL
Bachelor of Science in Biomedical Engineering

Skills and Technologies

Libraries: Pandas, NumPy, Spark, Hadoop, Scikit-Learn, SciPy, Seaborn, Matplotlib, WFDB
Languages: Python, SQL, Matlab, C++, C, HTML, CSS, JavaScript
Developer Tools: Git, Linux, Docker, HPC Cluster, Google Cloud Platform, Amazon Web Services, Google Colab, Big Query, Jupyter Notebook
Coursework: Algorithms, Big Data, Computational Biology, Database Systems, Machine Learning, Privacy & Security, Probability, Statistics

Experience

Data Scientist Intern — Aug 2024 – Present
Advanced Integrated Circuits and Systems Lab | Tufts University — *Medford, MA*

- Build a signal processing pipeline for PPG waveforms to filter and pre-process signals and extract features for patients with sickle cell anemia and hypertension. Reduced computational time by 75% with multi-threading.
- Create a tutorial with GitLab, GCP, AWS, and Tufts HPC Cluster for students to learn Big Healthcare data analytics techniques.
- Performed EHR data analytics with MIMIC-III and MIMIC-IV databases to select patient cohort and extract clinical and demographic characteristics.

Bioinformatics Intern — May 2025 – Present
Bioinformatics and Computational Biology Research Group | Tufts University — *Medford, MA*

- Contributed to the development of BIRDccNEST, a framework for identifying cell-to-cell trajectories in the BEELINE dataset.
- Designed, implemented, and evaluated graph pruning methods to enhance Louvain clustering, including creation of visualizations for results.

R&D Engineer — Jan 2022 – May 2025
Medtronic — *Boston, MA*

- Robotic-Assisted Surgery - Designed and developed sub-components for surgical instruments for Hugo.
- General Surgery - root-caused and identified solutions for hernia mesh and robotic trocar compatibility.
- GYN Health - designed and developed reprocessable electro-mechanical medical device for next-gen hysteroscopic system.
- Leveraged statistics for data analytics using MiniTab, and Excel for large mechanical testing datasets.
- Improved wristed-instruments margin by 68% through COGS efforts.
- Managed summer interns by providing guidance on technical projects and professional development.

Projects

Text Review Classifier | *Machine Learning Project - Co-Author*

- Created NLP text classifiers to categorize reviews from IMDB, Yelp, and Amazon by sentiment.
- Tuned hyperparameters for logistic regression classifier using GridSearchCV to perform 5-fold cross-validation across hyperparameter C for BagofWords method - 0.863 AUROC.
- Implemented BERT embeddings with an MLP classifier and an L2 penalty using GridSearchCV for hyperparameter alpha - 0.964 AUROC.

Movie Recommendation System | *Machine Learning Project - Co-Author*

- Predicted the ratings of user-movie pairs from MovieLens 100K dataset with collaborative filtering methods.
- Tuned hyperparameters K, batch_size, epoch, and step_size for SGD with L2 regularization.
- Implemented Surprise's SVD algorithm and tuned latent_factors, learning_rates, and regularization terms with 5-fold CV. Compared predictions by movie release year, gender of user, and age of user.