



Dushyant Pratap Singh

Roll No.:244103101

M.Tech - Computational Mechanics

Department of Mechanical Engineering

Indian Institute Of Technology, Guwahati

+91-9621685325

dushyant.singh@iitg.ac.in

ydushyant64@gmail.com

Github | Website

linkedin.com/in/ydushyant64

EDUCATION

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
M.Tech	Indian Institute of Technology, Guwahati	8.41 (Current)	2024-Present
B.Tech	Rajkiya Engineering College Banda	8.04	2018-2022
Senior Secondary	ISC Board	76.4%	2017
Secondary	ICSE Board	75%	2014

PROFESSIONAL SUMMARY

M.Tech candidate at IIT Guwahati specializing in Computational Mechanics and Machine Learning, with strong expertise in FEM, CFD, and structural analysis as well as ML/DL-driven predictive modeling. Skilled in applying simulations and AI to manufacturing, robotics, and predictive maintenance, delivering innovative and reliable solutions. Passionate about integrating engineering fundamentals with intelligent algorithms to support industrial automation and real-world applications.

EXPERIENCE

- Indian Institute of Technology Guwahati** *July 2025-present*
Teaching Assistant *Guwahati*
 - Mentored 40+ students in Optimization Methods in Engineering, covering linear/nonlinear programming, constrained optimization, and specialized algorithms.

PROJECTS

- Prescriptive Maintenance using Machine Learning and Deep Learning** *Ongoing*
M.Tech Project / Dr. Deepak Sharma / Professor / Department of Mechanical Engineering / IIT Guwahati
 - Designing a Prescriptive Maintenance framework using top Machine Learning algorithms(Random Forest, XGBoost etc and Deep Learning Models (LSTM, GRU, Transformers etc) for accurate fault predictions.
 - Integrating Reinforcement Learning for actionable decision-making, enabling optimal maintenance strategies based on predictive analysis from ML/DL models.
- Multi-Model NLP Pipeline for Resume Classification and Job Recommendation** *Aug. 2025 - Sep. 2025*
Self Project *Github*
 - Architected a multi-model NLP pipeline to classify resumes, implementing and evaluating KNN, Multinomial Naive Bayes, and RNN classifiers to reach a peak accuracy of 98.45% on 900+ labeled resume.
 - Developed and deployed the complete model as a full-stack, public-facing web application using Flask and successfully hosted it on the hugging face cloud service to deliver automated job recommendations.
- Complete and partial degradation of laminate under Hygro-Thermal Mechanical loading** *Mar. 2025 - May. 2025*
Prof. Debabrata Chakraborty / Composite Materials Course Project / IIT Guwahati *Github*
 - Developed MATLAB codes for simulating complete and partial degradation of glass epoxy laminates under combined mechanical and hygro-thermal loading conditions.
 - Successfully created a dual-model predictive tool, enabling a more physically accurate analysis of material degradation by capturing the effects of localized stiffness reduction at failure points.
- End-to-End Wine Quality Predictor with Hyperparameter Optimization** *Jun. 2025 - Jul. 2025*
Self Project *Github*
 - Achieved over 91% accuracy in predicting wine quality by building and optimizing a Random Forest classifier with advanced hyperparameter tuning (GridSearchCV, Optuna).
 - Deployed the final, optimized model as a live API using Flask on hugging face, engineered to efficiently process and serve predictions on a dataset of over 1,500 wine samples.
- Fatigue Life Prediction of Welded Cruciform Joints using ABAQUS & Fe-Safe** *May. 2025 - Jul. 2025*
Self Project *Github*
 - Validated a fatigue life prediction model for 8 unique 3D cruciform joints by performing an elastic-plastic FEA in ABAQUS and comparing the results to experimental data, achieving a high-fidelity simulation with a maximum error of only 6.7%.
- Numerical Optimization of Constrained Problems using C Programming** *July. 2024 - Nov. 2024*
Prof. Deepak Sharma/ ME 609 Optimization Term Project /IIT Guwahati *Github*
 - Engineered a custom C program for multi-variable constrained optimization, implementing the Penalty Method and integrating Bounding Phase with Newton's Method for efficient searches.
 - Validated the algorithm against benchmark functions like Rosenbrock, Trid, and Zakharov, achieving 20-30% faster convergence to the optimal solution compared to baseline implementations.

TECHNICAL SKILLS

- **Data Science & Programming:** ML/DL, Python, C/C++, Matlab, MySQL, Data Structure and Algorithm
- **Libraries/Framework:** Numpy, Pandas, Tensorflow, Keras, Scikit-Learn, Matplotlib, OpenCV
- **CAE/CAD Softwares:** Ansys Workbench(Fluent & Static Structural), Abaqus, Fe-Safe, Solidworks

KEY COURSES TAKEN

- **Mathematics:** Linear Algebra, Differential Calculus, Probability & Statistics
- **Mechanical Engineering:** Finite Element Method, Computational Fluid Dynamics, Mechanical Vibrations, Rotor Dynamics, Composite Materials, Continuum Mechanics
- **Programming & Technology:** Machine Learning for Engineers, Optimization Methods in Engineering, Numerical Analysis, Robotics & Robot Application, Engineering Computing Lab

CERTIFICATES / ONLINE COURSES

- Finlatics Machine Learning Program (Project Completion Certificate)
- Machine Learning Specialization (Coursera, Andrew Ng)
- Nueral Networks and Deep Learning (Coursera, Andrew Ng)
- Convolutional Nueral Networks (Coursera, Andrew Ng)
- Enhancing Soft Skills and Personality (NPTEL)
- Applied Computational Fluid Dynamics (Coursera, Siemens)

ACHIEVEMENTS

- Received a Letter of Recommendation from Finlatics for demonstrating strong proficiency in the 'Machine Learning Program' (Online, May-July 2025), applying ML models to diverse datasets spanning digital platforms, marketing, and finance.
 - Cleared GATE ME 2024 with 97.21 percentile among 65545 Candidates.
 - Placed in the top 25 percentile in the six-week Data Science and Machine Learning coursework organized by the Summer Analytics Club 2025, Consulting Analytics Club, IIT Guwahati.
-