Dushyant Pratap Singh

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M.Tech - Computational Mechanics
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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

EXPERIENCE

- **Indian Institute of Technology Guwahati** *July 2025-present*
  Teaching Assistant Guwahati
  – Guided students in ME 609 (Optimization Method in Engineering), covering classical methods, linear/nonlinear programming, single and multivariate constrained optimization, and specialized algorithms.

PROJECTS

- **Prescriptive Maintenance using Machine Learning and Deep Learning** *Ongoing*
  Dr. Deepak Sharma/Professor/Dept. of Mechanical Engineering/IIT Guwahati
  – Designing a Prescriptive Maintenance framework using top Machine Learnig 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.

- **Complete and partial degradation of laminate under mechanical and hygro-thermal loading** *Mar. 2025 - May. 2025*
  Self Project Github
  – Developed MATLAB codes for simulating complete and partial degradation of glass epoxy laminates under combined mechanical and hygro-thermal loading conditions.
  – The complete degradation model assumes instant loss of material properties once failure criteria are met, while the partial degradation model selectively reduces stiffness components at failed points, retaining intact properties elsewhere.

- **Optimization Methods in Engineering Project** *July. 2024 - Nov. 2024*
  Course Project Github
  – Completed a three-phase project applying diverse optimization techniques to solve unconstrained and constrained engineering optimization problems. Developed generic and robust algorithms capable of handling multiple variable sizes and evaluated their performance through convergence analysis and statistical measures.

TECHNICAL SKILLS

- **Programming**: Python, C/C++, Matlab
- **Database Management**: MySQL
- **Libraries/Framework**: Numpy, Pandas, Tensorflow, Scikit-Learn, Matplotlib, OpenCV
- **Others**: Data Structure and Algorithm

KEY COURSES TAKEN

- Finite Element Methods in Engineering
- Machine Learning for Engineers
- Robotics and Robot Application
- Computational Fluid Dynamics
- Optimization Methods in Engineering
- Introduction to Composite Materials
- Rotor Dynamics
- Continuum Mechanics
- Mechanical Vibrations

CERTIFICATES

- Supervised Machine Learning: Regression and Classification (Coursera, Andrew Ng)
- Advanced Learning Algorithms (Coursera, Andrew Ng)
- Unsupervised Learning, Recommenders, Reinforcement Learning (Coursera, Andrew Ng)
- Nueral Networks and Deep Learning (Coursera, Andrew Ng)
- Convolutional Nueral Networks (Coursera, Andrew Ng)
- Applied Computational Fluid Dynamics (Coursera, Siemens)

ACHIEVEMENTS

- Letter of Recommendation from Finlatics, in July 2025, for proficiency in handling complex datasets, extracting insights, and applying ML techniques to real-world business problems.
- 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.
- Ranked in the top 25 percentile in the six-week Machine Learning and Artificial Intelligence primer course organized by the IITG.ai Club, IIT Guwahati in 2025.