Dhruvin Dankhara

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SKILLS

- **Mechanical Engineering**: Product Design, Design for Manufacturing, Stress Analysis, CFD, GD&T, DFMEA
- **Design Tools**: SolidWorks, Ansys Mechanical Workbench, Ansys Mechanical APDL, Ansys Fluent, PyAnsys, Abaqus
- **Programming**: Python, MATLAB, Java, TensorFlow, PyTorch, Scikit-Learn, MySQL, Numpy, Pandas

WORK EXPERIENCE

Stress Analyst & Design Engineer, L&T - MHI Power Boilers, India **Aug 2018 - Jan 2022**

- Design by analysis of some of the world's biggest pressure vessels and product engineering of coal pulverizers in powerplants
- Prepared detailed FE models for various structural and thermal analysis, including steady state, transient, elastic, plastic, limit-load, fatigue (HCF & LCF), and creep simulations
- Developed internal guidelines and benchmarks for advanced simulations. Few examples are as follows: iterative optimization of localized PWHT stress using transient thermal models, welding stress simulation using moving heat load, simulation of hydro-formed membrane lined vessels with material, contact and geometric non-linearity
- Achieved more than 40% reduction in billed hours per project for FEA team through standardization and automation activities
- Design by analysis of heads & nozzles, skirt hotbox, transportation simulation, and lifting simulation for a total of 3 world's heaviest LC-Max reactors (Approx. 2300 tons each) for Vizag refinery, India
- Identified critical design flaw in reactor's load-bearing section due to specification discrepancies; collaborated with stakeholders to devise secure solution, ensuring timely delivery and safe reactor operation
- Developed an automated system for welding and pipe bending parameters selection using machine learning, eliminating a trial-and-error approach used during manufacturing

Graduate Research Assistant, University of Guelph, Canada **Jan 2021 - Jan 2024**

- Developed data-driven algorithms for probelms in transient heat transfer and solid mechanics.
- Used Python scripting in Abaqus to generate a dataset of random two-phase micro-structure and evaluate homogenized properties. Developed and trained visual transformer neural networks achieving less than 5% MSE.
- Developed physics-informed neural network to solve 1D heat diffusion and beam deflection problems. Implemented 1D finite element in Python to evaluate the performance of neural networks.
- Developed a reduced order model based on dynamic mode decomposition algorithm for abstract and complex transient heat transfer modeling. Models achieved less than 15% error in temperature profile prediction of complex heat fields.

Engineering Project Manager, Pumptronics Inc, Canada **May 2023 - Present**

- Leading the end-to-end engineering life-cycle for CSA compliant pumping and water purification systems, overseeing project management, product design, material procurement, manufacturing, and shipping
- Conducted in-depth analysis of competitors' product lineups and spearheaded the development of new products tailored for emerging markets, contributing to the company's expansion strategy
- Managed projects valued up to 700,000 CAD with total annual revenue of more than 2 million CAD
- Achieved atleast 3% increase in profit margins through multi-pronged optimization strategy focusing on simplified product design, new vendor development and lower working capital utilization
- Reduced customer quote preparation time by 50% through simplified & modular design, and standardized parts

EDUCATION

Master of Applied Science in Engineering — GPA: 3.95 **Dec 2023**
University of Guelph, Canada

Thesis: Case Studies in data-driven methods applied to engineering problems in solid mechanics and heat transfer.

Bachelor of Mechanical Engineering (Gujarat Technological University, India) **Jun 2018**

Diploma in Mechanical Engineering (Gujarat Technological University, India) **Jun 2015**

CERTIFICATIONS

- Lean Six Sigma White Belt - Binghamton University
- Finite Element Methods for Problems in Physics - Coursera
- Machine Learning Engineering for Production (MLOps) Specialization - Coursera
- Deep Neural Networks with Pytorch - Coursera