Devendra Singh
MTech (Industrial and Management Engineering) IIT Kanpur

✉ dev20@iitk.ac.in | ☎ +91-7983617816
in linkedin.com/in/devendra-singh-8586651b4/

Academic Details

Year	Qualification	Educational Institution	CPI/%
2020-contd	M.Tech, Industrial & Management Engineering	Indian Institute of Technology, Kanpur	9.25
2015-19	B.Tech, Mechanical Engineering	G.B. Pant University of Agriculture and Tech., Pantnagar	7.687
2015	Intermediate	Uttarakhand Board	R.K.S.V.M. Inter College, Bazpur	89.4%
2013	High School	Uttarakhand Board	R.K.S.V.M. Inter College, Bazpur	83.6%

Internship

Gomazone Technologies Pvt. Ltd. (May'21 –Jul'21)

Project: **Warehouse Planning Tool Development**

- Objective: To develop a web tool for replacing the excel tool, which is used to plan the warehouse operations, area requirement, expenditures (capital, labor, and operational) of warehouse to meet the customer contractual requirement
- Designed web tool using **Flask**, **SQLAlchemy** library of python, HTML, CSS

Project: **Transportation Cost optimization**

- Objective: To find the minimum cost of transporting 8 goods from source port to destination port while only 50 routes are feasible
- Given 50 feasible routes with source, destination, cost, transit time and weekly schedule
- Modelled the problem as **Mixed Integer Linear Programming** problem
- Used **CPLEX solver** in python

Academic Projects

Course: **Operations Research for Management** | Guide: Dr. Avijit Khanra (IITK)

Project: **Formulation and Solution of Travelling Salesman Problem Using Genetic Algorithm**

- Generated 10 random cities on Euclidean plane using Java
- Steps include **encoding of solution, initialization of population, crossover, mutation, termination check**
- Solved this Travelling salesman problem (**NP hard problem**) using metaheuristic algorithm in java

Project: **Supply chain network optimization**

- Objective: To minimize total supply chain cost, in which 5 suppliers provide 4 types of raw material to 3 factories, which produce 4 products to fulfill demand of 4 customers
- Formulated this problem as **Integer programming problem**
- Used **OR-Tools SCIP** solver in python

Course: **Stochastic Processes and Their Applications** | Guide: Dr. Avijit Khanra (IITK)

Term Paper: **Short Term Traffic Conditions Prediction on Freeways Using Hidden Markov Model**

- Needed speed, lane occupancy, volume data of freeway
- Performed **PCA** and found speed can only define the traffic state
- Defined traffic states in a two-dimensional space using **first-order statistics (Mean)** and **second-order statistics (Contrast)** of speed
- Used **Expectation-Modification algorithm** to get **state transition probability matrix** and **observation symbol probability matrix**
- HMM model gave accuracy of 90%

Course: **Advanced Decision Models** | Guide: Dr. Sri Vanamalla V (IITK)

Project: **Capacitated & Un-Capacitated Facility Location Problem**

- Objective: Given a set of supply sources and a set of customers, determine which facilities should be opened and find the best allocation of supply to customer to minimize cost
- Formulated MILP for Capacitated, Un-Capacitated and Single Sourcing version of facility location problem
- Developed a Greedy heuristic for NP-hard Capacitated facility location problem
- Developed an Algorithm which work on branch and bound technique where Simplex based LP relaxed solution is replaced by a trivially found solution of a transformed LP and hence it is much faster than the original branch and bound method
- Solved MILP models using CPLEX optimization solver and Developed Algorithm, Python language was used to code the problem

Coursework and Skills

Relevant Courses Probability & Statistics | Operations Research for Management | Operations Management | Applied Machine Learning | Advanced Decision Models | Stochastic Processes and Their Applications | Statistical Modelling for Business Analytics

Skills JAVA | Python (NumPy,Pandas,Matplotlib,Seaborn,Sklearn) | C++ | SQL | MS Office (Excel, Word, PowerPoint) |**CPLEX**

Achievements Position of Responsibility

- Secured AIR 689 in GATE 2020 (Mechanical Engineering)
- Secured 21st position in Uttarakhand Board merit list of intermediate examination in 2015
- Yellow Belt certified in Lean Six-Sigma

Member of Webinar Team, IME, IIT Kanpur (Sep'20-till now)

- Organized 20+ webinar on different topics of data science, ML, supply chain and optimization etc.

Member of an NGO ASTITVA

- worked for all round development of underprivileged children in Pantnagar from 2015 to 2019

Teaching Assistant (Aug'21-till now)

- Teaching Assistant in Operation Research for Management course in department of Industrial and Management Engineering, IIT Kanpur