SANCHIT SINGH

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PROFESSIONAL EXPERIENCE

Sr. Data Scientist, Colaberry Inc., St. Louis, U.S. Aug 2018 – Feb 2019

- Performed math modelling and data wrangling tasks in a Biotech Controlled Environment project for resources' scheduling. Developed an IBM DOC project.

Scientist/Engineer, Indian Space Research Organization Aug 2011 – July 2012

- Managed a team of 6 operators to meet GSLV MKIII mission targets within Integration & Testing group.
- Standardized components across different project stages achieving 12% reduction in inventory of spare parts.
- Handled material planning, transportation of sub-assemblies and structural installation for testing.
- Designed & Tested key structural components for use in prototype launch vehicle.

Operations Intern, Honda Cars India Ltd. Jun – Jul 2011

- Monitored routine Quality inspections. Assisted in preparation of Daily Production Charts.
- Applied Lean principles for Process improvement of wind shield installation, achieving 20% reduction in time.

R&D Intern, Coal India Ltd. Jun – Jul 2009

- Analyzed historic data and submitted recommendations for improvement in storage of various grades of coal.
- Designed & Simulated a new Refining Process achieving 95% reliability in test conditions.

SKILLS

DATA ANALYTICS	Programming **Python, C++, SQL - Microsoft SQL Server**, R, Matlab, MS Office Big Data Analysis Apache Spark PySpark API, **Amazon EC2** cloud computing and S3 storage Predictive Modeling **Regression & Classification** (SVM, Decision Trees, Random Forests, XGBoost), Ensemble Selection, Feature Engineering, Model Evaluation, Clustering, Time Series
OPERATIONS RESEARCH	Mathematical Modeling **Mixed Integer Programming - CPLEX** (C++ & Python API, OPL), AMPL, Google OR tools, Stochastic Programming, Dynamic Programming Supply Chain Production Scheduling, Demand Forecasting, Inventory Planning, Facility Design, Lean Manufacturing, GIS, Network Design, Vehicle Routing, Discrete Event Simulation

EDUCATION

Virginia Polytechnic Institute and State University, Blacksburg, VA May 2019
Ph.D. in Industrial Engineering (Specialization in Operations Research)

Virginia Polytechnic Institute and State University, Blacksburg, VA Dec 2017
Masters of Science in Industrial Engineering

Indian Institute of Technology, Guwahati, India May 2011
Bachelors in Mechanical Engineering

RESEARCH & PROJECTS

Biomass Supply Chain Logistics – A strategic Cost Analysis study
Designed & Modelled Supply Chain and Logistics network of 29,889 farms in South Virginia for a biomass production facility. Performed geographic information analysis (QGIS) and big data processing (using Apache Spark running on Amazon's EC2 cloud computing) for data pre-processing. Achieved 99% true optimality, reduced the annual operating cost by 33% through mathematical decomposition of the existing supply chain to establish an efficient vehicle routing plan.

Decision Support System (DSS) Application
Developed C++ software codes for the DSS for managers in residential construction industry. Improved work efficacy by 20% and reduced occupational hazards v/s conventional approach.

Simulation - Process Modelling for Autonomous Material Handling
Implemented a Discrete Event Simulation for a new Material handling system in a wafer fab facility and increased throughput by 5%.

Manufacturing Scheduling
Designed concepts and results for Hybrid Flow shops and Assembly job shops. Developed new scheduling algorithms to optimize operational costs with application to Agile manufacturing. Conceptualized superior scheduling methodology, 'Assemble to Order using Commonality of Subassemblies' towards achieving 'Mass Customization'.

Forecasting Aviation Activity - Time Series Analysis
Developed a high accuracy ensemble model to predict air-traffic using ARIMA time series & econometric modelling.

Fraud Detection - Trained a logistics regression model for a credit card company correctly identifying 80% frauds.

Housing Price prediction - Performed EDA, Statistical summaries and Visualizations on Housing dataset. Trained an Extreme gradient boosted Random Forest to predict sale prices achieving 98% accuracy on cross-validation data.

PUBLICATIONS

Mukherjee, N. J., Sarin, S. C., & Singh, S. (2017). Lot streaming in the presence of learning in sublot-attached setup times and processing times. International Journal of Production Research, 55(6), 1623-1639.

Cheng, M., Sarin, S. C., & Singh, S. (2016). Two-stage, single-lot, lot streaming problem for a 1+2 hybrid flow shop. Journal of Global Optimization, 66(2), 263-290.