



भारतीय प्रौद्योगिकी संस्थान खड़गपुर  
खड़गपुर-७२१ ३०२, भारत

Indian Institute of Technology Kharagpur  
Kharagpur - 721 302, India

Prof. Manoj Kumar Tiwari

Dean, Planning and Coordination  
Professor of Industrial and Systems Engineering

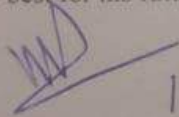
प्रो. मनोज कुमार तिवारी

TO WHOM IT MAY CONCERN

This is to certify that Mr Aniruddha Chattopadhyay, S/O Mr Debasish Chattopadhyay, a student of Dual Degree (Major in Industrial Electronics vertical of Quality Engineering Design and Manufacturing having Roll No- 17QE30007), from the Department of Industrial and Systems Engineering, Indian Institute of Technology, Kharagpur, has successfully completed two-month long project (from 1<sup>st</sup> of May to 1<sup>st</sup> of July 2019), under my supervision.

He formulated a linear programming problem to minimize the cost of Air Cargo Shipments for the freight forwarders using Integration, consolidation and deconsolidation. He solved the problem using CPLEX and applied ant colony optimization algorithm to minimize the run time. He also worked on algorithms to rank universities using QS University dataset. He will use Machine Learning to understand the intricacies of how the university ranking is analysed.

During this project, he has done a commendable job and I am sure he will continue to do so in the future. I wish him all the best for his future endeavors.

 12/7/2019

Dr. Manoj Kumar Tiwari

Professor and Former Head  
Department of Industrial and Systems Engineering,  
Dean Planning and Coordination  
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