**AI-Driven Inventory Management System for Global Supply Chains**

A Mini Project Report submitted

*in the partial fulfillment of the requirements for the award of the degree of*

**BACHELOR OF TECHNOLOGY**

in

**COMPUTER SCIENCE AND ENGINEERING**

by

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**CVR COLLEGE OF ENGINEERING**

**(*An Autonomous institution, NBA, NAAC Accredited and Affiliated to JNTUH, Hyderabad*)**

Vastunagar, Mangalpalli (V), Ibrahimpatnam (M), Rangareddy (D), Telangana- 501 510

**April 2025**

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**CERTIFICATE**

This is to certify that the project entitled “**AI-Driven Inventory Management System for Global Supply Chains**” being submitted by Sk. Ayesha Parveen(22B81A05D8), P. Shiva Kumar(22B81A05H7), K. Mounika (22B81A05F3) in partial fulfillment for the award of Bachelor of Technology in Computer Science and Engineeringto the CVR College of Engineering, is a record of bona fide work carried out by them under my guidance and supervision during the year 2024-2025.

The results embodied in this project work have not been submitted to any other University or Institute for the award of any degree or diploma.

Signature of the Supervisor Signature of the HOD

**V.D.S. Krishna Dr. A Vani Vathsala**

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**ACKNOWLEDGEMENT**

I sincerely thank **Dr. Ramamohan Reddy Kasa,** **Principal,** CVR College of

Engineering, for his cooperation and encouragement throughout the project.

I earnestly thank **Dr. A Vani Vathsala,** **HOD,** Department of CSE, CVR College

of Engineering, for giving timely cooperation and taking necessary action throughout the course of our project.

I express our sincere thanks and gratitude to my Mini-Project Coordinator **G. Venugopal Rao, Department of CSE** and Supervisor **V D S Krishna Senior Assistant Professor Department of CSE**, CVR College of Engineering, for her valuable help and encouragement throughout the project work.

Finally, I place in records my sincere appreciation and indebtedness to my parents

and all the Faculty Members for their understanding and cooperation, without whose encouragement and blessing it would have been impossible to complete this work.

With Regards,

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**SYMBOLS**

| **Symbol** | **Represents** |
| --- | --- |
| item\_id | Unique identifier for inventory item |
| name | Name of the inventory item |
| category | Category the inventory item belongs to |
| quantity | Current stock quantity |
| reorder\_level | Minimum stock threshold for triggering reorder alerts |
| supplier\_id | Unique identifier for a supplier |
| contact | Supplier’s contact information |
| order\_id | Unique identifier for an order |
| order\_type | Type of order — 'Purchase' or 'Sales' |
| items | List of items and quantities involved in an order |
| date | Transaction or order date |
| status | Current status of the order (e.g., 'Completed') |
| Average Demand | Average demand over a certain period |
| Lead Time | Time taken to receive stock after ordering |
| Safety Stock | Buffer stock to prevent stockouts |
| Reorder Point | Stock level at which a new order should be placed |
| Lag\_Quantity | Lag feature for stock quantity in time series analysis |
| RollingAvg\_Quantity\_7 | 7-day moving average of stock quantity |

**ABSTRACT**

Efficient inventory management is essential for businesses to keep supply chains running smoothly. Traditional systems often fail to predict demand, track stock in real-time, and optimize resources, leading to wasted costs and inefficiencies. It discusses how an AI-driven inventory management system can improve global supply chains through smart forecasting, automation, and live monitoring. Our system uses AI to predict demand changes, helping prevent stock shortages and excess inventory. It provides real-time tracking of stock levels across locations, allowing better decision-making. AI insights also improve supplier coordination, reduce delays, and optimize logistics for cost savings and efficiency. The solution easily connects with existing ERP systems and uses cloud computing for secure data management. AI-driven insights help businesses become more flexible and efficient in managing their supply chains. This research highlights how AI can significantly improve inventory management and logistics on a global scale.

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