IEEE COMPSOC

HACKHUB

FLAGSHIP EVENT 2025

Domain: Artificial Intelligence and Machine Learning

College: Vellore Institute of Technology, Chennai

Team Name: M^2.js

Team Members:

Mayan Sharma
P.Mokshagna Reddy
Sril Ashish Shukla
Jadeja Suryadeepsinh Bharatsinh

PROBLEM STATEMENT

Small and Medium Businesses (SMBs) in India face significant challenges in navigating complex compliance requirements for cross-border trade. Manual verification of international trade documents leads to errors, delays, and increased operational costs. Ensuring compliance with various country-specific regulations is time-consuming and often requires expertise that many SMBs lack.

Key Challenges:
Time-Consuming Manual Checks: Businesses must manually verify trade documents against multiple regulatory frameworks.
High Risk of Errors & Penalties: Mistakes in compliance can result in heavy fines, shipment delays, or even rejection of exports.
Scalability Issues: As businesses grow, handling compliance for multiple transactions becomes increasingly difficult.
Objective:
Develop an AI-powered Compliance Automation solution that leverages Natural Language Processing (NLP) and Machine Learning (ML) to:

Automatically scan and validate trade documents against country-specific regulations.
Detect inconsistencies or missing information to prevent errors before submission.
Provide real-time compliance feedback to SMBs, reducing processing time and improving accuracy.

YOUR SOLUTION

We are developing a user-friendly platform to streamline cross-border exports for Indian SMBs. It integrates rate negotiation, compliance checks, demand forecasting, and shipment tracking into a single solution. A dynamic 3D website enhances usability, making complex export processes intuitive.

Technical Stack:

- Machine Learning:
  - Rate Negotiation & Optimization: Gradient Boosted Decision Trees, Random Forests
  - Compliance Automation: NLP, CNN
  - Demand Forecasting: LSTM Networks
  - Shipment Delay Prediction: SVM, RNN

- Frontend: React.js, Three.js for an interactive 3D UI
- Backend: Node.js, Express.js for seamless operations
- Database: MongoDB for scalable data management (MERN Stack)
- Blockchain: Smart contracts with Solidity & web3.js for secure transactions

Decision Rationale

- Assumptions: SMBs need a simplified, cost-efficient export solution that integrates with existing workflows.
- Constraints: The platform must work in low-bandwidth environments and comply with international data privacy regulations.

Key Decisions:

- ML optimizes rates, forecasts demand, and predicts shipping delays.
- Blockchain ensures security and transparency, while MongoDB enables scalability.

UNIQUENESS & INNOVATION

- **Smart Rate Suggestions:** AI-driven rate optimization helps businesses save time and reduce shipping costs.

- **Automated Compliance:** ML-powered checks streamline export requirements, minimizing errors and penalties.

- **Blockchain Payments:** Secure, transparent transactions ensure reliability and trust.

- **Engaging 3D Design:** An interactive 3D interface enhances user experience, making navigation intuitive and engaging.

WHY SHOULD WE CHOOSE YOU?

Feasibility & User-Friendliness:

- Designed for SMBs with minimal technical expertise, ensuring a smooth user experience. Intuitive, interactive interface guides users step-by-step through exports.
- Automation reduces manual effort, enabling quick onboarding with minimal training. Real-time alerts and clear instructions empower confident decision-making.
- Blockchain integration enhances security and transparency, building trust for all users.

Success Metrics:

- User Satisfaction: Positive feedback on ease of use and efficiency.
- Performance: High accuracy in rate suggestions, demand forecasts, and compliance checks.
- Adoption Rate: Rapid and widespread platform adoption by SMBs.
- Update Ease: Seamless implementation of improvements based on user needs.
- Scalability: Handles growing data and user demands efficiently.