MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

Idea Title: AI-Powered Tariff & Trade Optimisation System

Team Name: Scripting_Ninjas

College Name: PEC,Chandigarh

Team Members:

1. Siddharth Chauhan
2. Saksham Gupta
3. Saksham Gumber

MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

Explanation of the Problem

- **Massive Financial Waste:** Businesses overpay **$100 Billion+** annually in customs duties due to inefficient classification.
- **Manual & Error-Prone: 95% of SMB importers** still rely on manual processes, taking 30-60 minutes per product.
- **High Risk of Penalties:** Customs penalties for misclassification average between **$50,000 and $500,000** per incident.
- **Regulatory Complexity:** Navigating **200+ Free Trade Agreements (FTAs)** and constantly changing tariff schedules is overwhelming for humans.
- **Unpredictable Costs:** Hidden duties and fees often lead to landed costs being discovered only at the border, disrupting supply chain planning.

MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

Proposed Solution

- **TradeOptimize AI Platform:** An intelligent system that automates trade compliance and optimizes costs.
- **Instant AI Classification:** Classifies products into HS codes in **< 3 seconds** using text, images, or documents.
- **Total Landed Cost Calculator:** Provides a complete breakdown of duties, taxes, fees, and freight before shipping.
- **Smart Route Optimization:** Compares shipping routes (e.g., Direct vs. Transshipment) to identify **15-30% duty savings**.
- **FTA Automation:** Automatically checks eligibility for Free Trade Agreements (like USMCA) to reduce duties to **0%.**
- **Compliance Engine:** Auto-generates required documentation (**Certificates of Origin**) and screens against denied party lists.
- **Ease Of Analysis:** Easier generation of reports for analysis and machine learning optimization, along with batch processing of entire inventory for batch HS Code extraction .

MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

Competitive Moat Feature Table

Feature	Us	Competitors	Advantage
AI Classification	✓	Descartes: Rule-based Avalara: Basic ML	85%→95% accuracy with explainability
Multi-modal Input (Image/Doc/Text)	✓	Text only (most)	Image→HS Code OCR→Classificatio
FTA Optimization Engine	✓	Manual research required	Auto-suggest routes with ROI analysis
Real-time Tariff Updates	✓	Monthly updates at best	Daily/real-time data feeds
Confidence Scoring + Explanation	✓	Binary results (no reasoning)	0-100% confidence with LLM reasonin
Route Comparison	✓	Single route calc	Multi-path Pareto optimization
Compliance Docs Auto-Generation	✓	Separate tools needed	Auto-generated from inputs
SMB Pricing	✓	$5k-$50k/year (enterprise-	$99/month starter

MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

Technical Approach

- **Multi-Modal AI:** Uses ensemble models combining **Fine-tuned BERT** (for text), **CLIP/Vision models** (for images), and **LLMs (GPT-4/Claude/Open Source [Vicuna/Ollama])** for reasoning.
- **RAG Architecture:** Implements **Retrieval Augmented Generation** with Vector Databases (Pinecone) to cross-reference binding rulings and precedents using semantic analogies.
- **Microservices Architecture:** Scalable backend using **FastAPI (Python)** for AI processing and **Node.js** for business logic and **2 separate dedicated microservices**.
- **Data Strategy:** Multi-database approach using **PostgreSQL** (transactional), **MongoDB** (documents/tariffs).
- **Optimization Algorithms:** Uses **Graph Algorithms** and **Pareto-Optimal** scoring to evaluate routes based on cost, time, and risk.

MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

Expected Impact

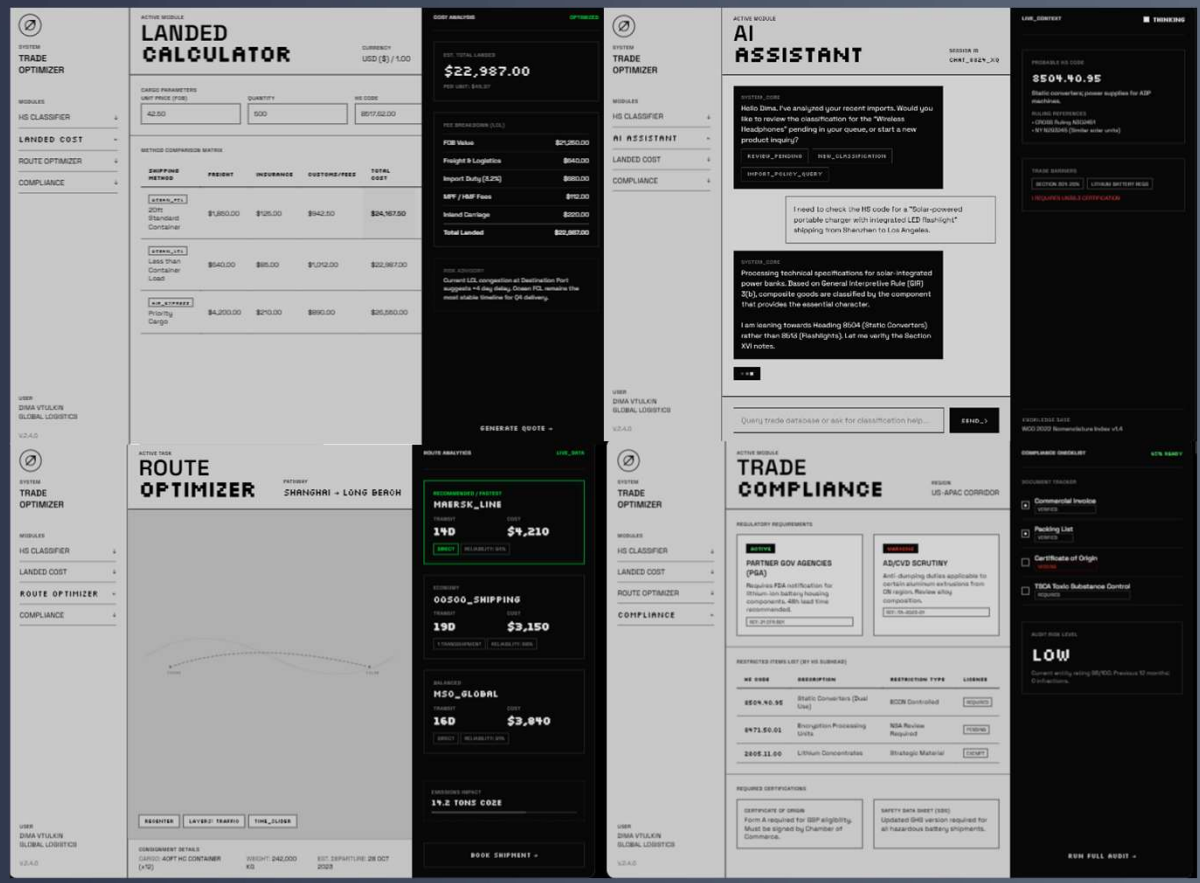
- **Significant ROI:** Reduces duty exposure by **15-30%** per shipment.
- **Operational Efficiency: 10x faster** processing (seconds vs. hours) allows teams to scale without adding headcount.
- **Higher Accuracy:** Improves classification accuracy from ~85% (manual) to **95% (AI-assisted)** with confidence scoring.
- **Market Potential:** Addresses a **$1.2 Billion** market growing to $2.8B by 2028.
- **Immediate Value:** Demonstrable savings (e.g., saving $11,250 on a single $45k shipment by optimizing the route).
- **Startup Potential:** Tackles a clear pain point with immediate ROI proof, enabling rapid customer acquisition in an underserved SME segment with recurring revenue potential and minimal infrastructure costs.

MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

Key AI Features for Tariff & Trade Optimisation :-

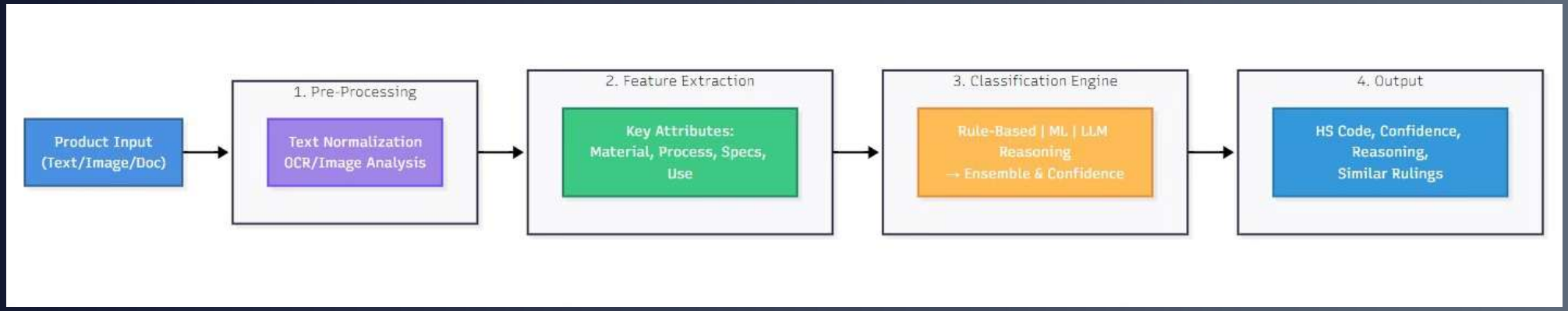
- AI-Powered HS Code Classification
- FTA & Trade Agreement Optimizer
- Compliance & Risk Management
- Route and Cargo Optimizer and locator
- Total Landed Cost Analysis
- AI Assistant



MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

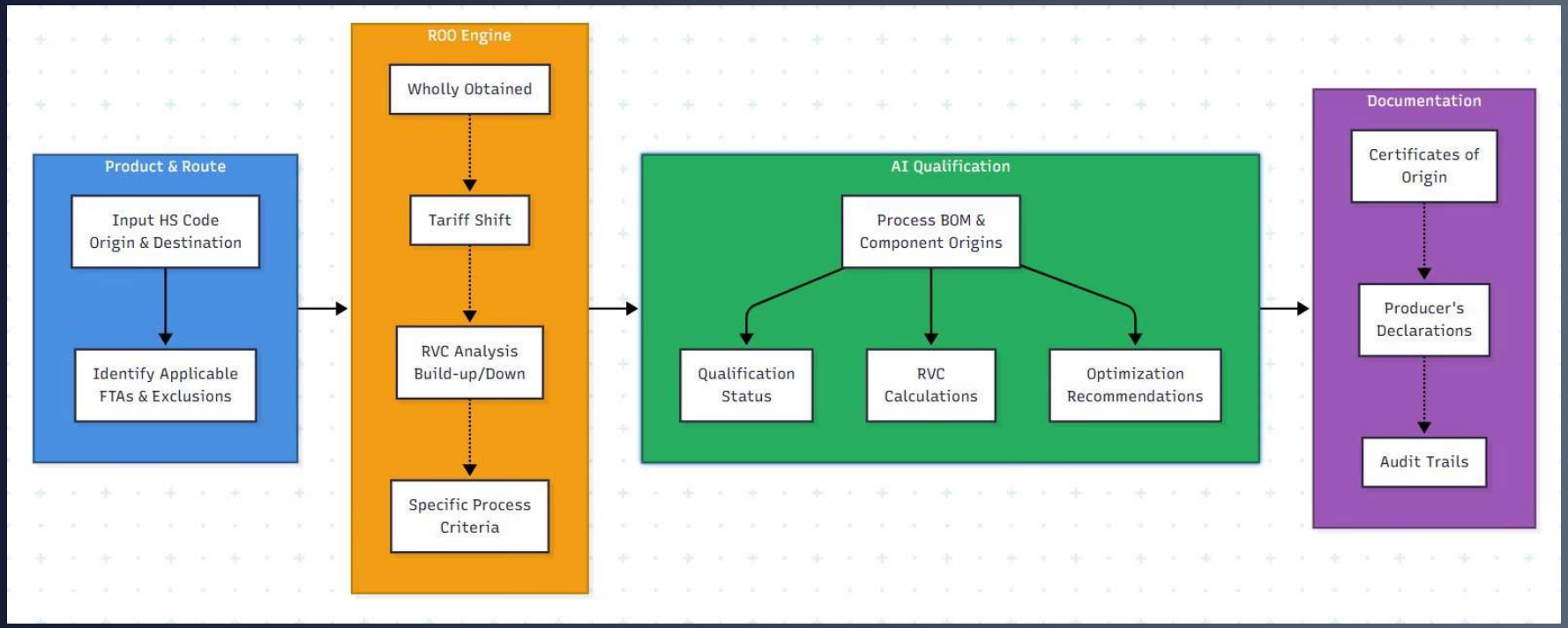
AI-Powered HS Code Classification :-



MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

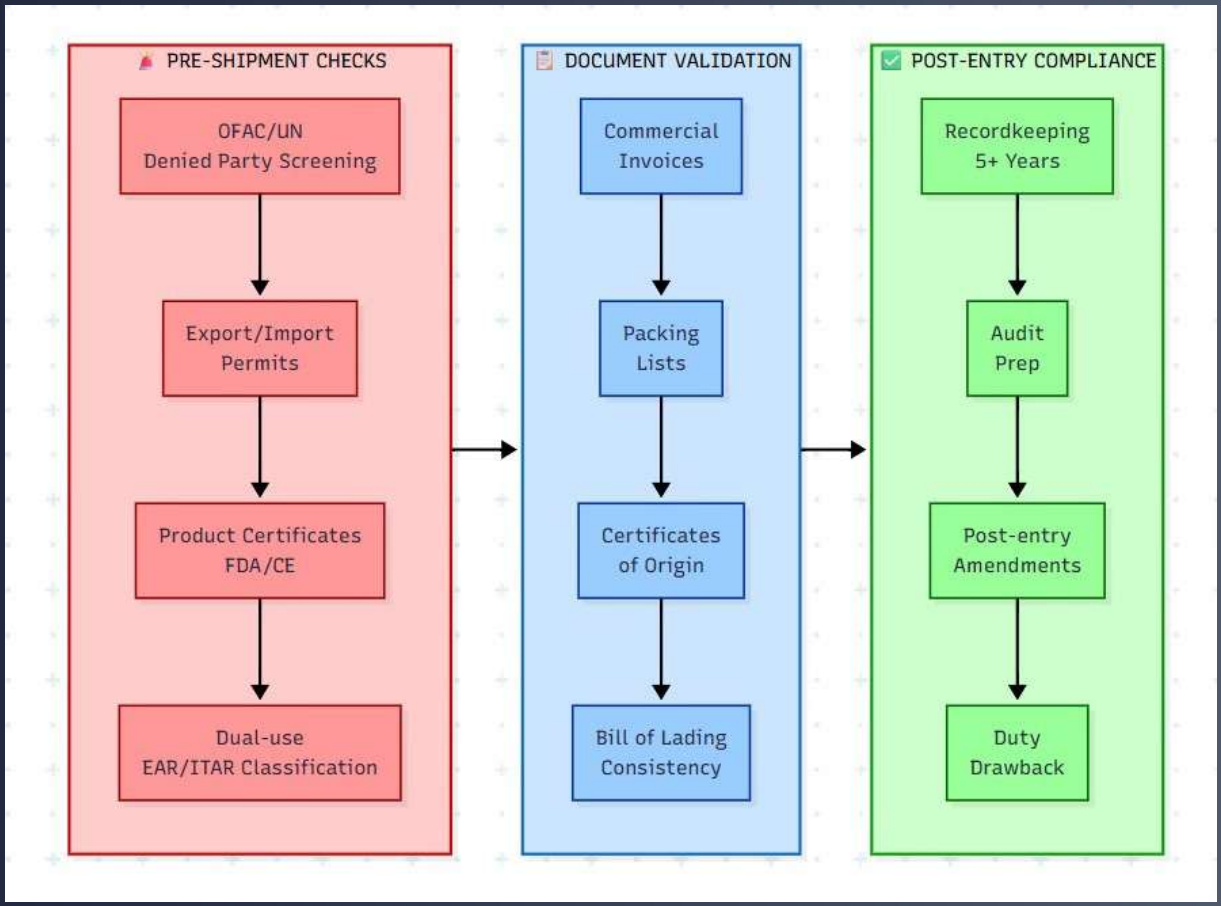
FTA & Trade Agreement Optimiser :-



MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

Compliance & Risk Management:-



MAKEATHON 8

Microsoft Learn STUDENT AMBASSADOR

THANK YOU

Regards:-

1. Siddharth Chauhan
2. Saksham Gupta
3. Saksham Gumber