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Idea Title: AI-Powered Tariff & Trade Optimisation System

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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.



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 .

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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→Classification
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 reasoning
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- starter)	\$99/month



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.



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.

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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



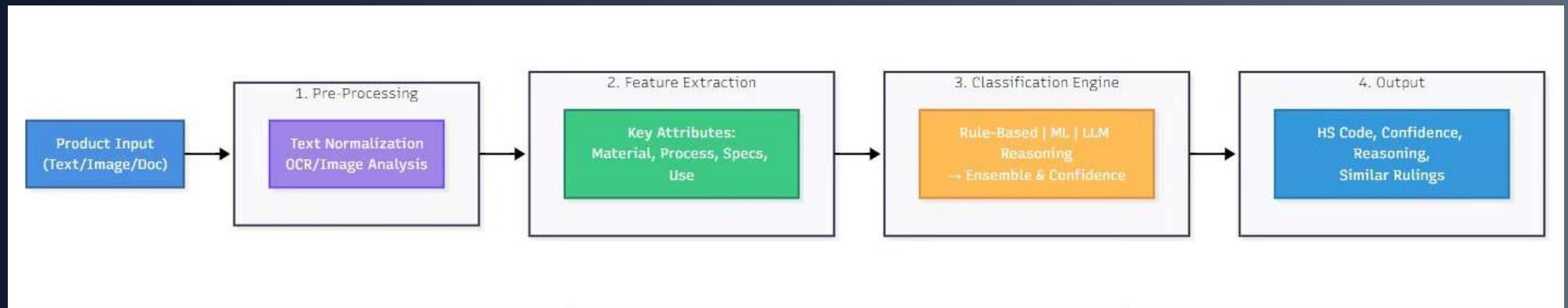
The screenshot displays five interconnected AI-powered modules from the MAREATHON8 platform:

- LANDED CALCULATOR**: Shows a breakdown of costs for a shipping route. Current total landed cost is \$22,987.00. It includes details for FOB Value (\$21,050.00), Freight & Logistics (\$940.00), Import Duty (\$525), IFR/HIF Fee (\$10.00), Inland carriage (\$200.00), and Total Landed (\$22,987.00). A note suggests using LCL transportation at Destination Port due to 4-day delay.
- ROUTE OPTIMIZER**: Shows a map route from Shanghai to Long Beach. It lists two options: Maersk Line (cost \$4,210) and Direct (cost \$3,150).
- OPTIMIZED COST ANALYSIS**: Displays a breakdown of costs for a shipping route. Total cost is \$22,987.00. Components include FOB Value (\$21,050.00), Freight & Logistics (\$940.00), Import Duty (\$525), IFR/HIF Fee (\$10.00), Inland carriage (\$200.00), and Total Landed (\$22,987.00).
- AI ASSISTANT**: An AI-driven chatbot interface. It asks about recent imports and provides a message ID (CHAT_4324_AQ) and a link to review pending classification requests. It also discusses a specific cargo item (Solar-powered portable charger) and its HS code.
- TRADE COMPLIANCE**: Manages regulatory requirements. It shows a table of restricted items (HS codes, descriptions, restriction types, and licenses required) and a section for required certifications (component or origin form, safety data sheet, and hazard statement).

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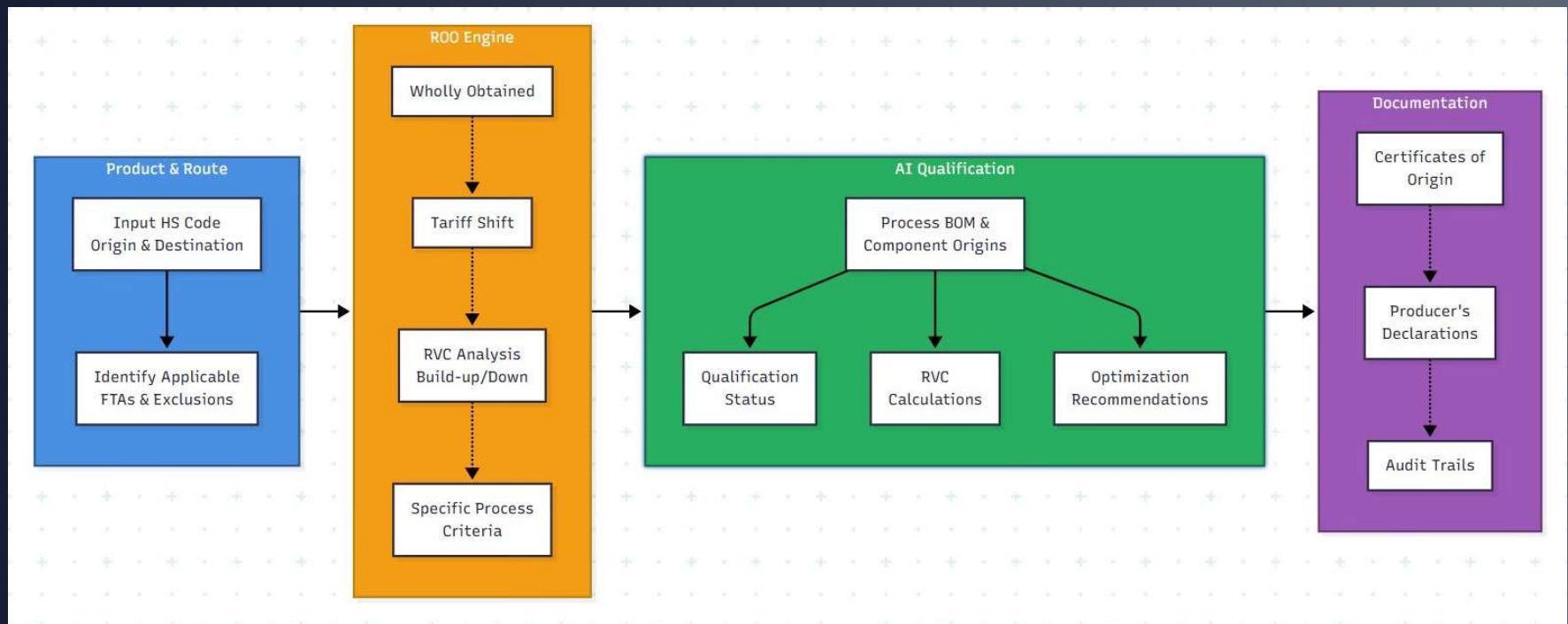
AI-Powered HS Code Classification :-



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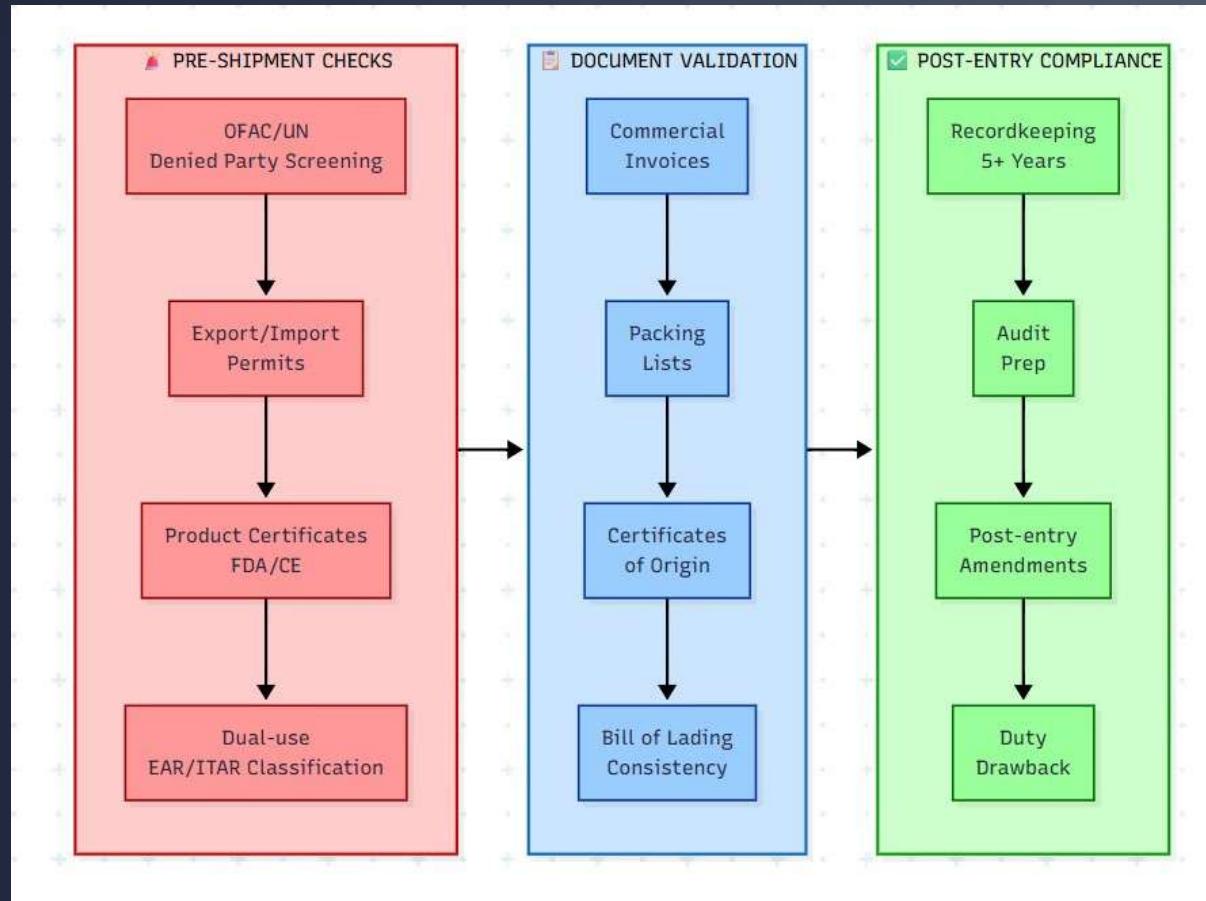


FTA & Trade Agreement Optimiser :-



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Compliance & Risk Management:-



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THANK YOU

Regards:-

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