

# TEAM NEURA

AIGuard: Anomaly-Based Detection of Parallel Imports & Grey Market Leakage

**Problem Statement:** Parallel imports cause massive revenue leakage through unauthorized low-price sales. Our system automatically flags such channels using PVI and geographic risk analysis.

## 1. Data Ingestion

Source: Real-world transactional data (UCI Repository) + Niche Scrapped Data.

Features: Unit Price, Country of Sale, StockCode (Product ID), and Customer ID.

.Goal: Establish a global baseline for "Authorized" pricing.



## Feature Engineering 2.

Dynamic MSRP Calculation: Estimating the "Fair Market Value" per product across all regions.

Price Deviation Factor: Calculating how far a specific listing is from the median.

Geographic Risk Mapping: Identifying "High-Divergence" countries where prices are consistently 30%+ lower than the manufacturer's home market.



## 3. ML Detection

Model: Isolation Forest (Unsupervised Learning).

Logic: Detecting outliers that don't follow the standard price/volume distribution of authorized retailers.

Categorization: Labeling listings as High Risk, Medium Risk, or Low Risk.



## BI Command Center 4.

Dashboard: Built in Power BI/Tableau.

KPIs: Total Revenue Leakage, Top 10 Unauthorized Seller Locations, and Product Volatility Index.

