

Product Price Prediction Solution

Methodology

Data Processing

- **Text Analysis:**
- **Feature Engineering**
- **Image Processing: Model Selection**

I used a **Random Forest Regressor** because:

- Handles mixed data types well (numbers, categories)
- Robust to outliers and noisy data
- Provides good performance without extensive tuning
- Works within the 8-billion parameter limit

Key Innovations

Smart Unit Processing

Instead of treating all units equally, I standardized them into meaningful categories:

- Weight units (ounce, pound, gram)
- Volume units (fl oz, liter, milliliter)
- Count-based units (count, capsule, pack)
- This helped the model learn consistent pricing patterns

Product Category Intelligence

The system automatically detects:

- Food products (chutney, candy, spices)
- Beverages (tea, coffee, juice)
- Health products (supplements, vitamins)
- Seasonings and flavorings

Error Resilience

- Handles missing or malformed data gracefully
- Standardizes diverse unit formats automatically
- Provides fallback predictions for edge cases