

## 1. Project Overview

**Project Name:** Target Lock – AI Product Hunter

**Goal:** Help e-commerce sellers quickly find profitable and trending products using AI, instead of manually researching marketplaces like Amazon, AliExpress, or Alibaba.

**Platforms:** Android app + Website

Core idea: Combining **data scraping**, **AI/ML for predictions and recommendations**, and **user-friendly dashboards**.

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## 2. Modules & Requirements

### A. Data Collection (Scraper / API Integration)

**Purpose:** Get product data from online marketplaces.

**Tasks / Requirements:** - Scrape or access APIs from Amazon, AliExpress, Alibaba. - Collect fields: product name, category, price, ratings, reviews, stock, images, links. - Handle dynamic websites → may require Selenium. - Store data in a structured database (MySQL or MongoDB). - Schedule regular scraping updates.

**Skills Needed:** Python, BeautifulSoup, Selenium, API integration, database design.

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### B. Database

**Purpose:** Store and manage scraped data.

**Requirements:** - Choose relational (MySQL) or NoSQL (MongoDB). - Tables/collections: Products, Categories, Users, Trends, Recommendations. - Efficient indexing for fast search. - Backup & security (encrypted storage).

**Skills Needed:** SQL/NoSQL, database modeling.

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### C. AI / ML Models

**1. Product Ranking:** Score products based on profitability.

**2. Trend Prediction:** Predict next month's popular products using time-series models (Prophet, LSTM).

**3. Collaborative Filtering:** Recommend products based on similar users' preferences.

**Skills Needed:** Python, Pandas, scikit-learn, Prophet, TensorFlow/PyTorch, recommendation systems.

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## D. Backend API

**Purpose:** Serve data to Web and Mobile frontends and connect AI models.

**Requirements:** - Python-based (Flask or Django REST framework). - REST APIs for search, trending products, recommendations, reports, chatbot. - Security: HTTPS, authentication (JWT/OAuth).

**Skills Needed:** Python, Flask/Django, REST API design, security.

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## E. Web Dashboard

**Purpose:** Visual interface for users.

**Requirements:** - React.js frontend. - Charts, graphs, heatmaps. - Filter/search products. - Download reports (Excel/PDF). - Optional: User login.

**Skills Needed:** React.js, HTML/CSS, chart libraries, API integration.

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## F. Android App

**Purpose:** Mobile interface.

**Requirements:** - Flutter or native Android. - Same features as website. - API integration. - Optional: Push notifications.

**Skills Needed:** Flutter/Dart, mobile UI design, API integration.

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## G. Chatbot

**Purpose:** Users ask questions like "Top trending shoes?"

**Requirements:** - Dialogflow or Rasa. - Connect to backend for real-time data.

**Skills Needed:** Python, Dialogflow/Rasa, NLP basics, API integration.

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## H. Reporting

**Purpose:** Export product data and analysis.

**Requirements:** - Excel or PDF export. - Include charts/tables. - Download functionality.

**Skills Needed:** Python (Pandas/openpyxl/ReportLab), frontend integration.

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### 3. Target Users

- **Admin:** Manage system & products.
  - **Seller:** Find profitable products & download reports.
  - **Analyst:** Analyze trends and insights.
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### 4. Technical Stack Summary

Component	Suggested Tech
Backend	Python (Flask/Django)
Frontend Web	React.js
Android App	Flutter
Database	MySQL / MongoDB
AI/ML	scikit-learn, Prophet, PyTorch/TensorFlow
Scraper	BeautifulSoup, Selenium
Hosting	AWS / GCP
Security	HTTPS, AES-256 encryption
Chatbot	Dialogflow / Rasa

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### 5. Skills Required

- Python (scraping, AI/ML, backend)
  - Database (MySQL/MongoDB)
  - React.js (web dashboard)
  - Flutter (mobile app)
  - AI/ML (trend prediction, scoring, recommendations)
  - Cloud deployment
  - REST APIs & security
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### 6. Challenges / Complexity

- Efficient scraping for multiple platforms
- Accurate ML models for trend prediction
- Integrating AI with real-time API
- Cross-platform consistency
- Scalable cloud deployment

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**Summary:** Target Lock requires scraping & data collection, database & backend APIs, AI/ML models, web & mobile frontends, chatbot, reporting, and secure deployment. It is a full-stack + AI project, ideal for FYP and industry-ready.