Tirana Real Estate Companion

ML + Web Hackathon

24 – 25 February, 2026

Tirana, Albania

Organizer:

Holberton School Albania

Holberton

What You Will Build

End-to-End Experience

A complete web application that bridges the gap between raw data and user-facing features.

Browse & Filter

Interactive listing browser to explore Tirana's property market with custom filters.

Detailed Insights

Deep dive into property specifics, structured data, and rich descriptions.

ML Pricing Engine

Predictive pricing models providing fair market estimates and valuation ranges.

Learning Objectives

This hackathon is designed to push your technical boundaries by integrating multiple disciplines into a single, cohesive product.

Different skills. One shared outcome.

Bridge ML to Web UI

Connect models to functional APIs.

Data Mastery

Clean nulls and handle outliers.

Product Thinking

Build a complete user flow.

Git Collaboration

Master team-based development.

Dataset Overview

Source

`data/tirana_house_prices.json`

JSON array of property listings.

Target Variable

price_in_euro

Predict the listing price based on property features.

Key Features

- Location (Lat/Lng, Address)
- Size (sqm, rooms, baths)
- Amenities (Elevator, Parking)
- Text (Albanian descriptions)
- Status (Furnished, Type)

Reminder: Handle missing values and outliers by team decision.

Required User Flow

Browse & Filter

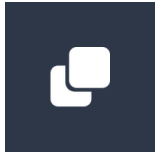
Search listings by price, size, and location.

Listing Details

View structured data and property descriptions.

Estimate + Range

Get ML-driven price predictions and fair ranges.



Comps

Compare with 5 similar properties in the area.

Users start by filtering listings and end with deep pricing insights through ML-driven estimates and market comparisons.

Core MVP

Key Requirements

These features are the minimum for a successful submission. Focus on quality.

Listings Browser

Searchable list with filters for price, beds, baths, sqm and one custom filter.

Details Page

Structured view of property fields, full description and formatted address.

ML Estimate

Predicted price from model output, plus a concise fair range (low–high).

Comparable Comps

Show five similar properties with a short note on comparability.

Bonus Features

Smart Labels

Automatic indicators for Overpriced, Fair, or Underpriced listings.

Favorites & Compare

Save properties and compare them side-by-side.

Market Insights

Show average €/sqm by area and key groupings.

Explainable ML

Provide a concise breakdown of "Why this estimate?" for users.

Choose up to 3 bonus features to differentiate your product.

How You'll Be Judged

Category		Points
Product Fit:	Does the app solve the user's problem?	**0–10**
Web Execution:	UI quality, responsiveness, and flow.	**0–10**
ML Usefulness:	Accuracy and relevance of predictions.	**0–10**
Comps Quality:	How well are similar properties selected?	**0–10**
Engineering Clarity:	Code quality and Git workflow.	**0–10**

Working MVP > Extra Features

Bonus: 0–10 for advanced features (only if the core MVP works perfectly).

Suggested Tech Stack

Machine Learning

- Python
- Pandas & NumPy
- Scikit-learn
- Joblib (Model persistence)

Backend

- Flask (Recommended)
- FastAPI
- RESTful API Design

Frontend

- HTML5 / CSS3
- Vanilla JavaScript
- Fetch API

Development

- Git & GitHub
- Virtual Environments
- Postman / Insomnia

Pro Tip

Agree on an API contract early. Define your endpoints and JSON shapes before you start coding.

Suggested 8-Hour Plan

Time management is key. Divide tasks early and focus on the core user flow to ensure a working demo.

Session 1 — 4 Hours

- Explore and clean the dataset
- Decide on preprocessing steps
- Build initial baseline ML model
- Define the API contract (JSON shapes)

Session 2 — 4 Hours

- Build UI and integrate with API
- Implement comparable properties view
- Polish UI and fix critical bugs
- Prepare and test the final demo

Focus: Divide and conquer to meet the deadline.

Submission Checklist

- [x] **GitHub Repository**

  Submit a link to your team's public repository.

- [x] **Comprehensive README**

  Clear instructions on how to run both backend and frontend locally.

- [x] **Standardized Demo Flow**

  Browse → Details → Estimate + Range → Comps.

7–10 Minute Demo Maximum

Final Rules

- Must run locally for demo
- Use provided dataset only
- Keep scope small & focused
- Finish the core user flow

“Alone we can do so little; together we can do so much.”

— Helen Keller