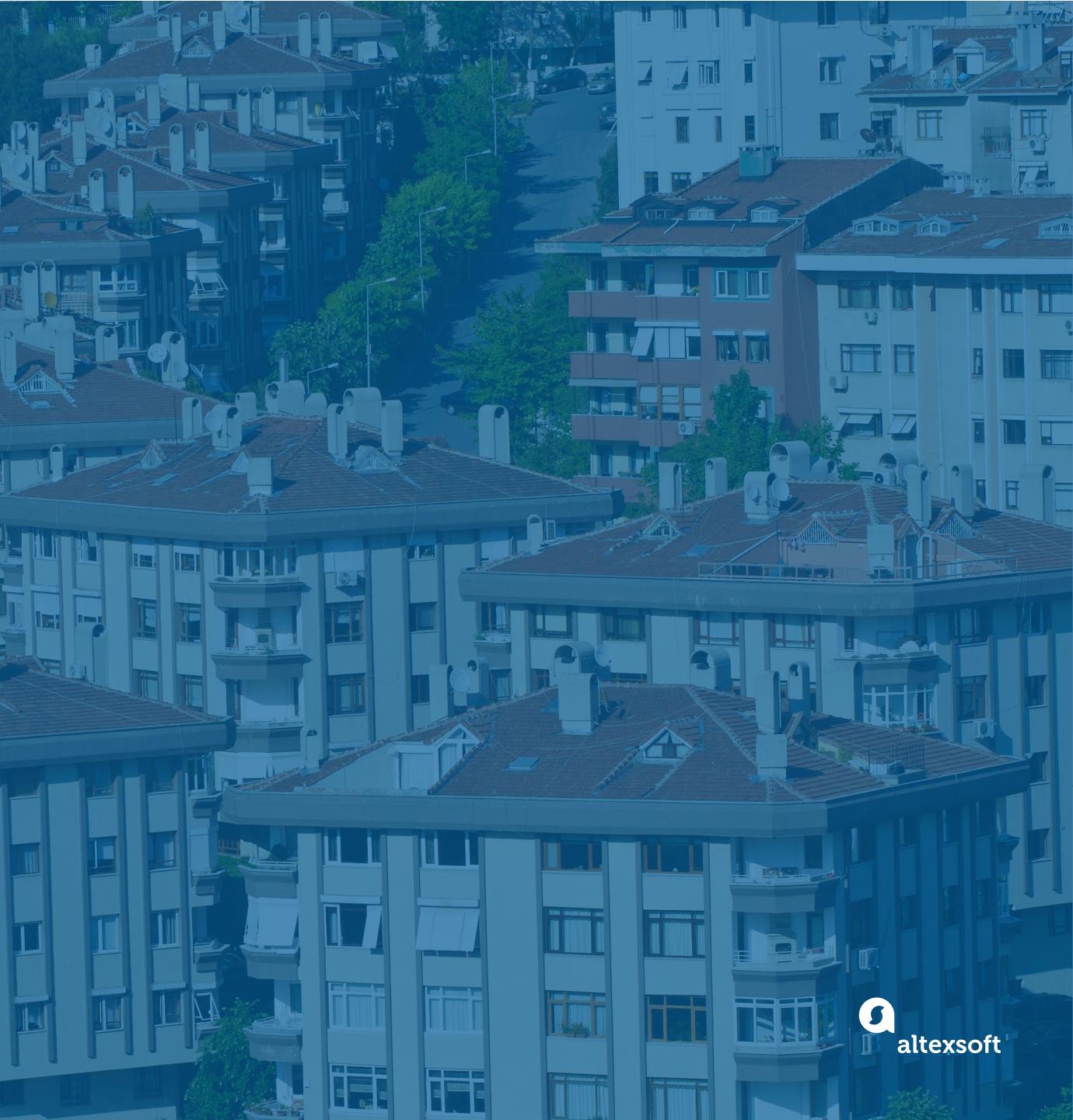Case Study

Homsters

Homsters and AltexSoft: Building Machine-Learning-based
Recommender System for Real Estate Marketplace

Python, Pandas, scikit-learn, Plot.ly, Matplotlib, Flask, and SQL Server

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Background

Homsters is a real estate service company that provides residential property marketplaces for cities in United Arab Emirates, Turkey, Hungary, Serbia, and Kazakhstan. Local portals support real estate buyers with comprehensive property search engines for new development residences.

Homsters engaged the AltexSoft data science team to build and integrate a machine-learning-based recommender system that would personalize a property search for different users based on their preferences.

Challenges

To build a recommender system, AltexSoft data scientists dealt with the following tasks:

1.

Collect and prepare user data

2.

Build a recommender engine that initiates the first time a new user visits the platform

3.

Integrate the engine into existing products

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Value Delivered

1. Data research and development of the data collection mechanism

AltexSoft's team researched, evaluated existing data, and defined key variables that impact user choice. Data scientists considered existing user interaction data and suggested additional types of information to power a recommender engine. Variables included user interactions, metadata (location, device, browser, etc.), and other analytics. The team also helped to design data storage for this purpose and covered all data preparation and cleaning activities to remove irrelevant variables and correct incomplete or inaccurate data.

2. Designing recommender engine with rapid user profiling

One of the biggest challenges was that most users visit the marketplace just once. To be helpful, the system must gather and analyze individual visitor data rapidly during the first session. The data science team designed an algorithm that instantly generates a user profile, which allows for tailoring property recommendations even for a single visit right after the first interactions. The engine uses a content-based filtering method meaning that it matches user profile data with specific attributes for each property profile.

3. Integrating the engine into the web service with automatic updates

As user preferences and specifics of properties change over time, the algorithm connected to a web service is capable of updating itself to account for more recent and relevant data. The engine is deployed as a web service powered by Flask, a Python-based framework. The service is used by the main web application that delivers a personalized list of properties for each visitor.

In the marketplace, the recommender system achieved **a 15-30 percent higher conversion rate** (contacting property sellers) across different markets compared to a non-personalized search.

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Testimonial

"At Homsters we strive to help buyers of new-built property find the best offers by providing all information needed to make a choice. AltexSoft team did a great job developing a recommender engine for search pages. Initially, we had the same results for all visitors. As part of the cooperation, we've created a solution that track the user behavior, analyzes it and personalizes the list of properties, that may be relevant for each particular visitor. We've managed to considerably improve engagement metrics on the website and increase the percentage of users that have contacted developers using our platforms."

— Denys Arysmiatov, Head of promotion department at Homsters

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Approach and Technical Info

The Homsters recommender engine was developed by a team consisting of a machine learning engineer and a machine learning team lead.

The duration of the project was about 4 months with the total scope of work completed in about 1.5 man-months.

The technology stack included: **Python, Pandas, scikit-learn, Plot.ly, Matplotlib, Flask, and SQL Server.**

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