

Product Assistant: AI-Powered Shopping Experience

Welcome to Product Assistant, a comprehensive .NET MAUI mobile application that redefines online shopping. We offer a **unified conversational shopping experience**, leveraging AI to make product discovery intuitive and engaging.



The Power of Unified Search & Chat



Natural Language Interaction

Chat with our AI assistant just like a personal shopper. No complex menus, just natural conversation.



Intelligent Product Discovery

The AI automatically detects your search intent and performs "grounding searches" to find exactly what you need.



Inline Product Display

See product results directly within your chat, eliminating the need to navigate between pages.



One-Click Collection

Easily add discovered products to your personal collection for later review or purchase.

Core Features: Enhancing Your Shopping Journey



Unified AI Shopping Assistant

- A single conversational interface for all your shopping needs.
- AI detects search intent and performs automatic grounding searches.
- Products are seamlessly displayed **inline** with the conversation.
- Add products to your collection with a single tap.

My Collection Page

- Organize and review all your saved products.
- Search and filter your collection with ease.
- Manage saved items with intuitive controls.

Architecture: Powering the Experience

Our application is built on a robust **microservices architecture** and follows the MVVM pattern for a scalable and maintainable solution.

API Service

Main gateway for all client requests, orchestrating other services.

SQLite Database

Reliable file-based storage for products and conversation memory.



AI Service

Integrates with Google Gemini API for intelligent conversations and grounding searches.

Scraping Service

Efficiently extracts product data from Arukereso.hu.

Mobile App (.NET MAUI)

The user-facing application providing a seamless shopping experience.

Key Technologies Driving Innovation



.NET MAUI 8.0

Cross-platform mobile application framework for native experiences.



C# 12

Leveraging modern language features for efficient and clean code.



Google Gemini API

AI-powered conversational service for intelligent interactions.



Auth0

Secure OAuth2/OIDC authentication for user access.



SQLite

Lightweight, file-based database for local data persistence.



Docker & Kubernetes

Containerization and orchestration for scalable deployments.

Seamless Experience: AI Tools in Action

Our AI assistant is equipped with advanced tools to provide a truly intelligent shopping experience. The core of this is the *Grounding Search*.

01

User Query

You ask naturally: "Find me a laptop under 50,000 HUF."

02

Intent Detection

AI analyzes your message and understands you're looking for products.

03

Grounding Search

AI automatically calls the SearchProductsTool, which queries our Scraping Service.

04

Inline Results

Products from Arukereso.hu are seamlessly displayed within your chat conversation.

05

Interaction

You can save products, ask follow-up questions, or refine your search.

Robust Data Model: Organizing Your Information

Our data model is designed for efficiency and clarity, ensuring your product and conversation data is securely managed.

Product Entity

- **Id:** Primary Key
- **Name:** Product name
- **Price:** Product price
- **ImageUrl & ProductUrl:** Direct links for product information
- **UserId:** Links products to specific users

Conversation Memory

- **Conversation Entity:** Tracks entire conversations.
- **ConversationMessage:** Stores individual chat messages with context.

Leveraging SQLite and Entity Framework Core, we ensure reliable data persistence and seamless user-specific data indexing.

Device Features: Enhanced Mobile Experience

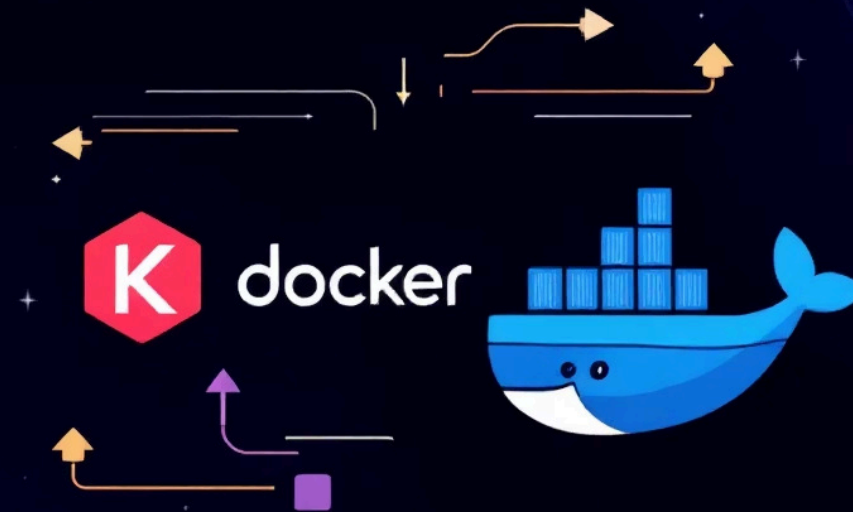
The Product Assistant mobile app integrates essential device features to provide a smooth and contextual user experience.

Network Connectivity Detection

- Real-time monitoring of your network status.
- Prevents API calls when offline, saving data and battery.
- Enables smart data synchronization when connection is restored.

Geolocation Services

- Retrieves your current location for personalized results.
- Calculates distances to product stores for convenience.
- Supports location-based product recommendations and store finding.



Deployment & Scalability

Whether for local development or production, Product Assistant is designed for flexible deployment using modern containerization and orchestration technologies.

Local Development with Docker Compose

Easily spin up all microservices with a single command for quick local testing and development.

Kubernetes Deployment

For production, deploy with Kubernetes for robust orchestration, scalability, and high availability.

CI/CD Integration

Automated build and deployment pipelines using GitHub Actions or Azure DevOps ensure continuous delivery.

Future Enhancements & Support

We are continuously working to improve and expand the capabilities of the Product Assistant.

Looking Ahead

- Enhanced AI model selection and push notifications for price alerts.
- Barcode scanning, social sharing, and multi-language support.
- Advanced filtering, caching strategies, and analytics dashboards.

This project fulfills the requirements for the .NET MAUI Semester Project, showcasing a comprehensive approach to modern mobile application development.

Need Assistance?

- Consult our detailed documentation files.
- Review error logs and verify configuration steps.
- Refer to official documentation for .NET MAUI, Gemini API, Auth0, Docker, and Kubernetes.

