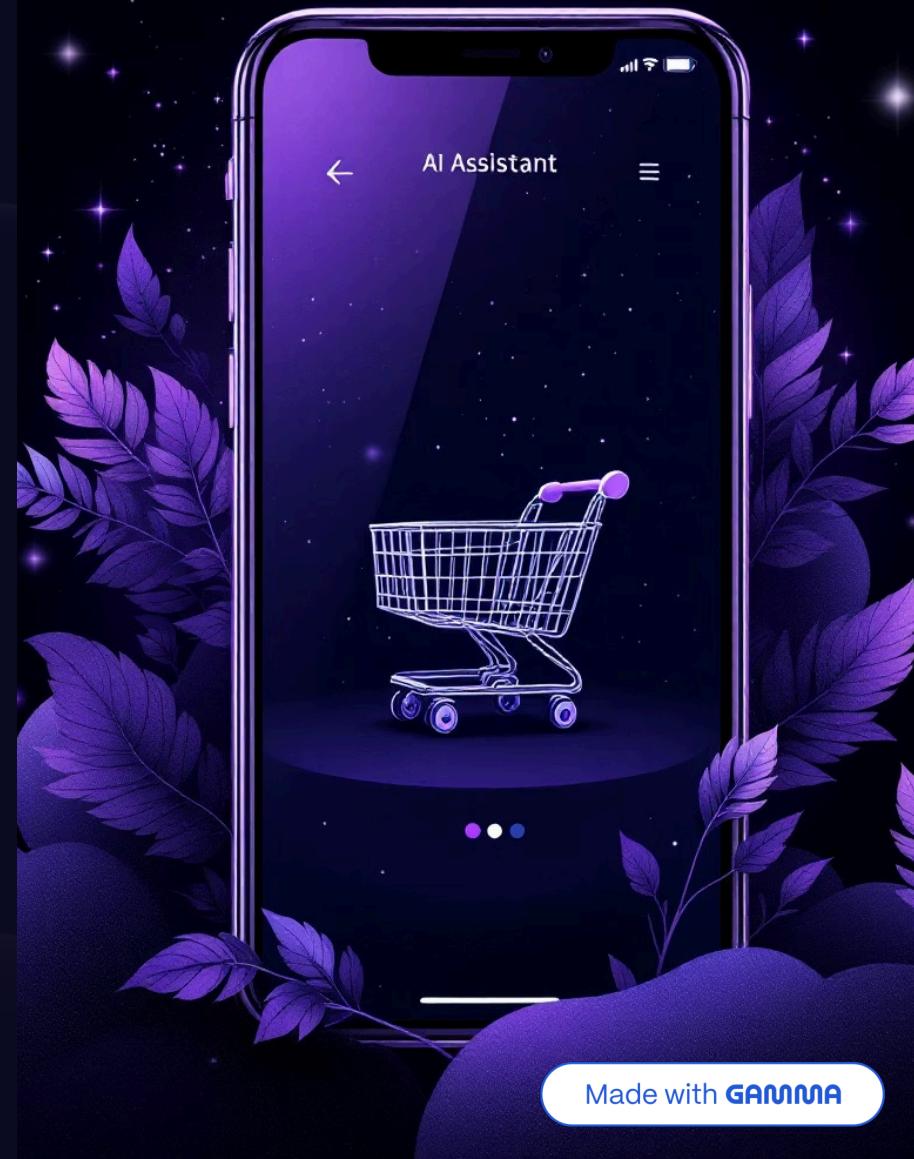


# Product Assistant: AI-Powered Shopping Experience

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

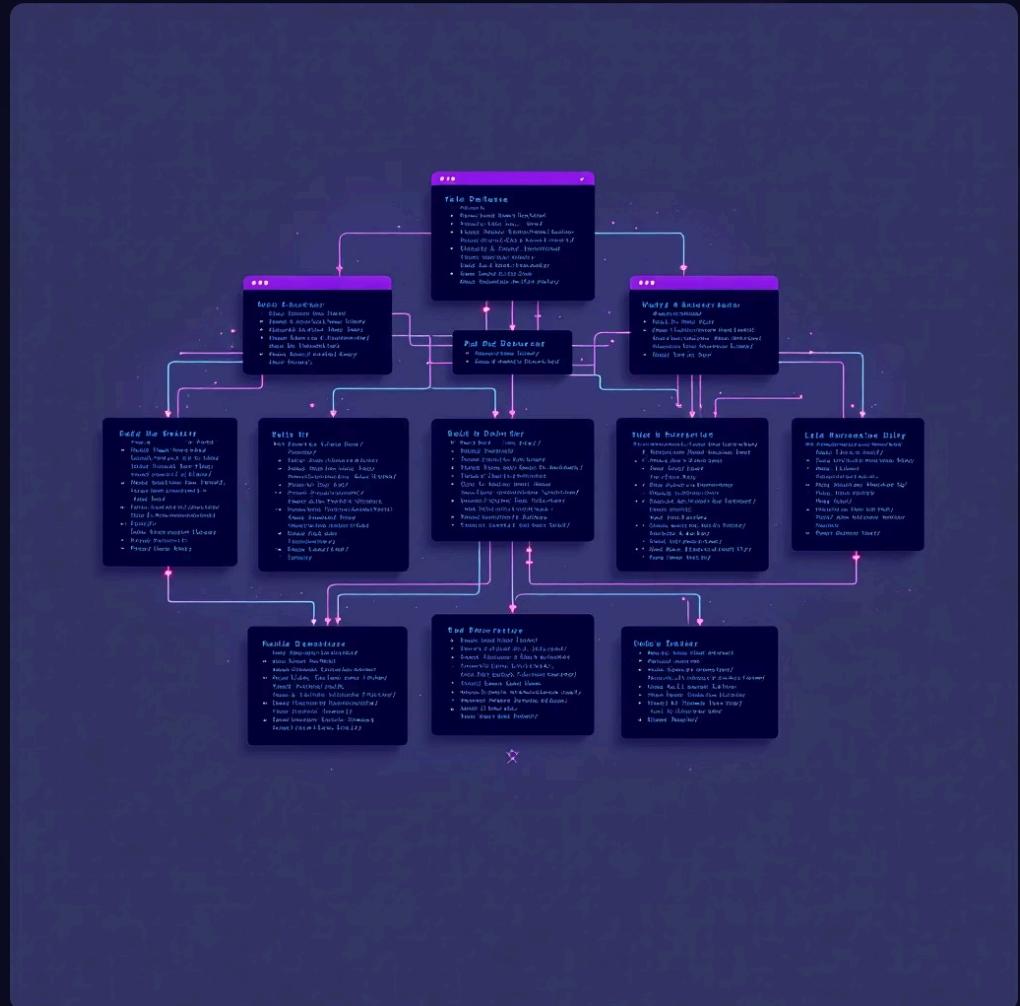
Products from Arukereso.hu are seamlessly displayed within your chat conversation.

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.

