Use Case 16: AI Shopping Companion

• Industry: Retail & Consumer Goods

• Problem Statement: Customers often need assistance with finding products, comparing

prices, and making purchasing decisions. Providing personalized support can improve

customer satisfaction and drive sales, but human sales assistants may not always be

available or able to provide tailored recommendations efficiently.

• Solution Overview: A conversational AI assistant that provides personalized shopping

assistance, understanding customer needs and preferences through natural language

conversations, providing product recommendations, answering questions, and guiding

customers through the shopping journey.

• Technical Details:

o Azure OpenAI Service: Utilize GPT-4 to understand customer queries, provide

personalized responses, and engage in natural-sounding conversations about

products and services.

o Azure Bot Service: Develop and deploy the conversational AI assistant on various

channels, such as the company's website, mobile app, or messaging platforms.

o Azure Cognitive Services (Recommendations API): Provide AI-powered product

recommendations based on customer preferences, purchase history, and browsing

behavior.

o E-commerce Platform APIs: Integrate with e-commerce platforms to access

product catalogs, inventory data, pricing information, and customer reviews.

o Customer Data Platforms: Access and analyze customer data from various sources

to understand customer needs, preferences, and behaviors, and tailor

recommendations and assistance accordingly.

• Potential Benefits:

o Enhanced Customer Experience: Provide customers with a personalized and

interactive shopping experience, making it easier to find products they need and

want.

o Increased Sales: Guide customers towards relevant products and offers, increasing

the likelihood of purchase and boosting sales.

o Improved Customer Loyalty: Build stronger customer relationships by providing

helpful and personalized assistance, fostering loyalty and repeat business.

o 24/7 Availability: Offer round-the-clock support to customers, regardless of

business hours or staff availability.

o Reduced Customer Service Costs: Automate responses to common customer

inquiries, freeing up human customer service agents to handle more complex

issues.

• Challenges and Considerations:

o Ensuring Accurate Product Information: Provide accurate and up-to-date product

information, including descriptions, pricing, and availability.

o Handling Complex Customer Requests: Develop the AI assistant to handle a wide

range of customer requests, including those that require human intervention or

access to specific product knowledge.

o Integrating with Existing E-commerce Systems: Seamlessly integrate the AI

assistant with existing e-commerce platforms and systems to ensure a smooth

customer experience.

o Data Privacy: Protect sensitive customer data and ensure compliance with data

privacy regulations when handling personal information.

• Success Metrics:

o Customer Satisfaction with the Assistant: Measure customer satisfaction with the

assistant's helpfulness, accuracy of information, and ease of use.

o Number of Successful Purchases Assisted by the Assistant: Track the number of

purchases made by customers who interacted with the AI assistant.

o Increase in Average Order Value: Monitor the impact of the assistant on the average

order value, indicating its effectiveness in upselling and cross-selling products.

o Reduction in Customer Service Inquiries: Track the reduction in customer service

inquiries related to product information and purchase assistance.

• Example Scenario: A customer looking for a new smartphone interacts with the AI shopping

companion, providing their preferences for screen size, camera quality, and budget, and

receives personalized recommendations that meet their needs. The assistant also answers

questions about specific phone features, compares prices from different retailers, and

helps the customer complete the purchase.

Here's how you can approach this **AI Shopping Companion** use case with a project mindset, using Azure services step-by-step.

I’ll break it into key phases and include example code and integration ideas to help you get started.

**🚀 Step-by-Step Project Blueprint: AI Shopping Companion**

**🧩 1. Define Your Use Case & Data Sources**

**Example**: Assist customers in finding smartphones based on their preferences (e.g., screen size, camera quality, budget).

* **Data Sources**:
  + Product catalog (stored in a SQL or CosmosDB)
  + Customer data (via CDP or CRM)
  + Browsing history (web tracking)
  + Inventory & pricing (via E-commerce APIs)

🔧 **Sample Architecture and flow chart:**

Frontend App

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Azure App Services

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Azure SQL / CosmosDB ←→ Azure Blob (Product Images, PDFs)

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Azure Data Factory Static Assets

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Azure Data Lake (raw/staged parquet/csv data)

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Azure Synapse Analytics / Azure Databricks (data transformation, ML model training)

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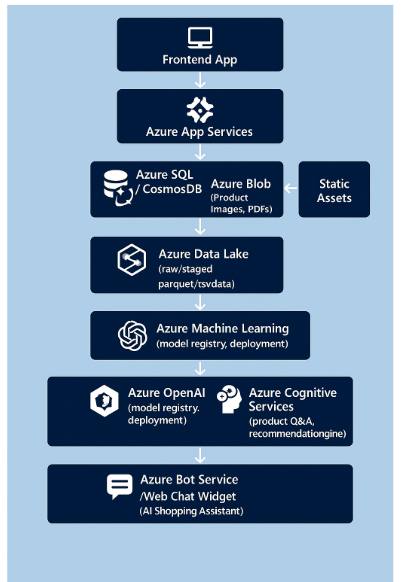
Azure Machine Learning (model registry, deployment)

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Azure OpenAI / Azure Cognitive Services (product Q&A, recommendation engine)

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Azure Bot Service / Web Chat Widget (AI Shopping Assistant)



**🔍 Explanation of Additional Components:**

* **Azure Data Factory**: Moves and transforms product catalog, PO data, and inventory logs from SQL/CosmosDB → ADLS.
* **Azure Synapse / Databricks**: Used for advanced analytics — identify demand patterns, stockouts, and supplier performance.
* **Azure Machine Learning**: Trains models like demand forecasting, delivery prediction, anomaly detection.
* **Azure OpenAI Service**: Powers natural language features like chatbot Q&A for product info or voice agents for order status.
* **Azure Cognitive Services**: Adds vision (image tagging), speech (voice interface), and personalization (recommendations).
* **Azure Bot Service**: Integrates the AI assistant with customer-facing channels (website, Teams, WhatsApp).

**2. Conversational Layer (Azure OpenAI + Bot Service)**

* **a. GPT-4 Prompting Logic (Azure OpenAI)**

**import openai**

**openai.api\_key = "your\_azure\_openai\_key"**

**response = openai.ChatCompletion.create(**

**engine="gpt-4",**

**messages=[**

**{"role": "system", "content": "You are a shopping assistant."},**

**{"role": "user", "content": "I'm looking for a phone with a great camera under $600."}**

**]**

**)**

**print(response['choices'][0]['message']['content'])**

**b. Deploy with Azure Bot Framework**

* **Use Azure Bot Service + Web Chat to embed on a website or app.**
* **Integrate with Teams, Slack, WhatsApp using Bot Channels.**

**📊 3. AI-Powered Recommendations (Azure Cognitive Services)**

**Use the Personalizer API or Recommendations API:**

**{**

**"contextFeatures": [{"userPreferences": "camera, budget"}],**

**"actions": [**

**{"id": "phone\_101", "features": [{"price": 599, "camera": "108MP"}]},**

**{"id": "phone\_102", "features": [{"price": 650, "camera": "64MP"}]}**

**]**

**}**

**This helps tailor product suggestions dynamically.**

**🔗 4. E-commerce Integration**

* **Use REST APIs or SDKs to fetch real-time:**
  + **Product info**
  + **Availability**
  + **Reviews**
  + **Price comparisons**

**import requests**

**def get\_product\_info(product\_id):**

**url = f"https://api.myecommerce.com/products/{product\_id}"**

**headers = {"Authorization": "Bearer YOUR\_TOKEN"}**

**return requests.get(url, headers=headers).json()**

**🧠 5. Customer Data Insights (Customer Data Platform + Synapse)**

* **Ingest customer data into Azure Synapse Analytics**
* **Run analytics to segment users based on:**
  + **Past purchases**
  + **Cart abandonment**
  + **Product views**

**🌐 6. Location-Aware Shopping (Azure Maps)**

* **Use Azure Maps for store locations or delivery availability.**

**// JavaScript: Show map on web**

**var map = new atlas.Map('myMap', {**

**center: [-122.33, 47.6],**

**zoom: 10,**

**authOptions: {**

**authType: 'subscriptionKey',**

**subscriptionKey: 'Your\_Azure\_Maps\_Key'**

**}**

**});**

**🧹 7. Data Quality & Privacy (Optional)**

**Use Azure Purview or Microsoft Defender for Cloud for:**

* **Data lineage**
* **Security policies**
* **Compliance alerts**

**✅ Project Deployment Flow**

1. **Chatbot & GPT-4 Layer → Azure Bot Service + OpenAI**
2. **Backend Intelligence → Azure Cognitive Services + Customer Data Platform**
3. **Database → Azure SQL or CosmosDB for catalog**
4. **APIs → Product & order integration**
5. **Analytics → Azure Synapse for reporting**
6. **Maps → Azure Maps for local search or delivery**
7. **UI → React/Vue Web App, Mobile App, or MS Teams integration**

**📈 Success Metrics You Can Track:**

* **Customer satisfaction (via survey post-interaction)**
* **% increase in sales via chatbot**
* **Average Order Value (AOV)**
* **Reduced calls to human agents**