

A POV on building Bot Applications

Key Takeaways

- Bot Application
- Bot Framework SDK for .NET
- Use Case
- Working

1. Bot Applications

A bot is an app or some software that does a task automatically. Users interact with in a conversational way using text or speech. It may be a simple question and answer bot, or a complex bot that allows people to interact with services in an intelligent manner using pattern matching and artificial intelligence techniques.

2. Bot Framework SDK for .NET

For developing a bot we can use azure bot service or the Bot Framework SDK for .NET. Bot Framework SDK is a powerful framework for constructing bots that can handle both free-form interactions and more guided conversations. It is easy to use and leverages C# to provide a familiar way for .NET developers to write bots.

3. Use Case

This Information and document Chatbot will help developers providing pre created sample projects and templates of different kinds of software and provide information related to these projects.

Developers can use these projects and templates to build his/her own project.

It provides different application architecture styles to users according to their need such as if a user wants to develop some shopping website, then he can interact with the bot and give his requirements to it and according to these requirements bot will provide various architectures styles such as website created in MVC or ASP.NET and user can modify those styles or templates according to his need.

4. Working

Information and document Chatbot could answer different questions defined in QNA maker and provide different types of documents stored in data sources such as azure blob storage required by the user.

For developing an intelligent bot, our first step is to make our bot intelligent enough to understand the user text or speech. For this purpose Language Understanding (LUIS) is used. LUIS understands the user speech and extract the intents and entities from it. Intents are how LUIS determines what a user wants to do, in simple words it finds out the intension of the user.



An entity is used like a variable in algebra, it is used to capture and pass important information.

```
"entities": [
  {
    "entity": "cairo",
    "type": "Location",
    "startIndex": 20,
    "endIndex": 24,
    "score": 0.956781447
  }
]
```

Results from LUIS and QNA maker comes in the json format, we need to extract reliable Information from it. For this purpose we need to write a program in C# code which extract that information.

Following is the sample C# code to retrieve intents and entities from json.

```
public class TopScoringIntent
{
    public string intent { get; set; }
    public double score { get; set; }
}

public class Intent
{
    public string intent { get; set; }
    public double score { get; set; }
}

public class Entity
{
    public string entity { get; set; }
    public string type { get; set; }
    public int startIndex { get; set; }
    public int endIndex { get; set; }
    public double score { get; set; }
}

public class RootObject
{
    public string query { get; set; }
    public TopScoringIntent topScoringIntent { get; set; }
    public List<Intent> intents { get; set; }
    public List<Entity> entities { get; set; }
}
```

Note: We need to write C# code according to our json format, different json formats generates different C# code.

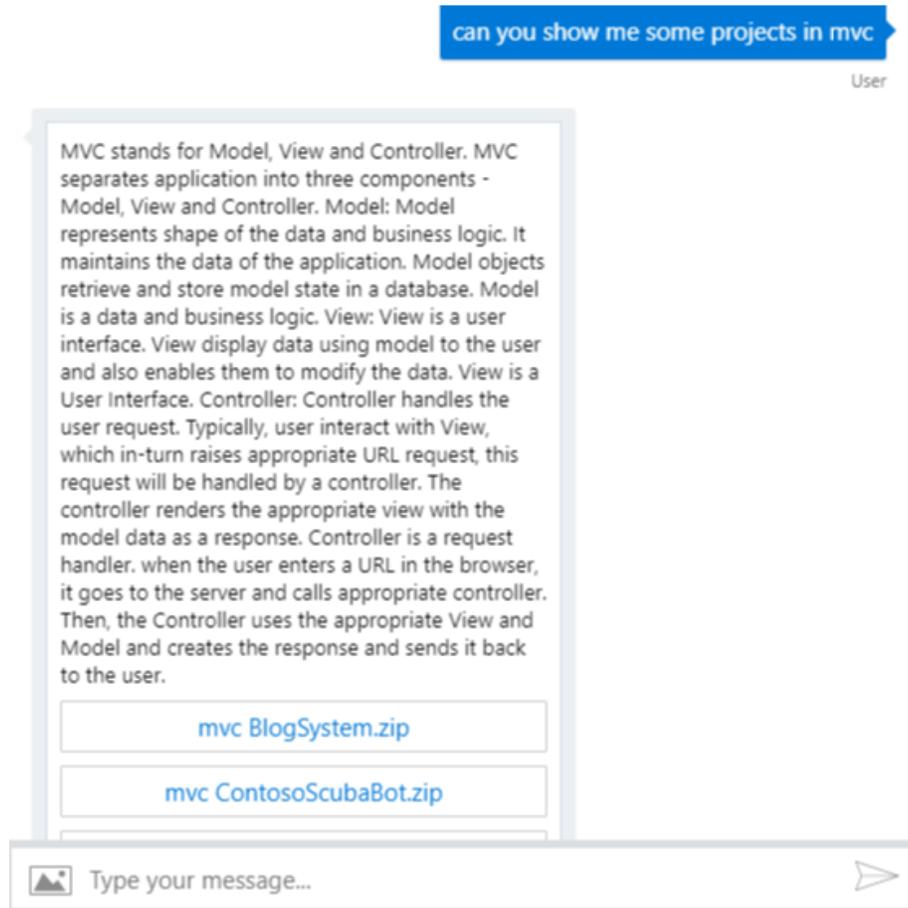
In this bot we use intents and entities to fetch information and required documents from QNA maker and blob storage (you can use any other data sources such as cosmos DB).

Azure Blob storage is Microsoft's object storage solution for the cloud. Blob storage is used for storing huge amounts of unstructured data. Unstructured data is data that does not adhere to a particular data model or definition, such as text or binary data.

For searching documents we are using azure search service (it is a component of the Microsoft Azure Cloud Platform providing indexing and querying capabilities for data uploaded to and download from Microsoft servers). Intents and entities are passed to azure search service and it will start searching documents in provided data sources (in this case azure blob storage). Azure search build a great enterprise search solution, reduce complexity with a fully-managed service, get up and running quickly.

Note: Azure search service is not used to fetch information from QNA maker, we need to write separate C# code to fetch information from QNA maker.

Following is the sample example of Information and document Chatbot.



As we can see user asked some projects in MVC, so the bot returned some information about MVC architecture style stored in QNA maker and documents from azure blob storage using azure search service.