



M.KUMARASAMY
COLLEGE OF ENGINEERING
NAAC Accredited Autonomous Institution
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Thalavapalayam, Karur – 639 113.



EDUCATION APP USING AI

A MINOR PROJECT – IV REPORT

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BACHELOR OF ENGINEERING

in

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

M.KUMARASAMY COLLEGE OF ENGINEERING

(Autonomous)

KARUR – 639 113

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**M.KUMARASAMY COLLEGE OF ENGINEERING,
KARUR**

BONAFIDE CERTIFICATE

Certified that this **18ECP105L - Minor Project IV** report “EDUCATION APP USING ARTIFICIAL INTELLIGENCE” is the bonafide work of “**AARTHY A (927621BEC002), ABINAYASRI N(927621BEC004), ABINAYA T (927621BEC005), GANISKA S(927621BEC052)** who carried out the project work under my supervision in the academic year **2023-2024 - EVEN**.”

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PROJECT COORDINATOR

INSTITUTION VISION AND MISSION

Vision

To emerge as a leader among the top institutions in the field of technical education.

Mission

M1: Produce smart technocrats with empirical knowledge who can surmount the global challenges.

M2: Create a diverse, fully -engaged, learner -centric campus environment to provide quality education to the students.

M3: Maintain mutually beneficial partnerships with our alumni, industry and professional associations

DEPARTMENT VISION, MISSION, PEO, PO AND PSO

Vision

To empower the Electronics and Communication Engineering students with emerging technologies, professionalism, innovative research and social responsibility.

Mission

M1: Attain the academic excellence through innovative teaching learning process, research areas & laboratories and Consultancy projects.

M2: Inculcate the students in problem solving and lifelong learning ability.

M3: Provide entrepreneurial skills and leadership qualities.

M4: Render the technical knowledge and skills of faculty members.

Program Educational Objectives

- PEO1: Core Competence:** Graduates will have a successful career in academia or industry associated with Electronics and Communication Engineering
- PEO2: Professionalism:** Graduates will provide feasible solutions for the challenging problems through comprehensive research and innovation in the allied areas of Electronics and Communication Engineering.
- PEO3: Lifelong Learning:** Graduates will contribute to the social needs through lifelong learning, practicing professional ethics and leadership quality

Program Outcomes

- PO 1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO 2: Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO 3: Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO 4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO 5: Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes

PSO1: Applying knowledge in various areas, like Electronics, Communications, Signal processing, VLSI, Embedded systems etc., in the design and implementation of Engineering application.

PSO2: Able to solve complex problems in Electronics and Communication Engineering with analytical and managerial skills either independently or in team using latest hardware and software tools to fulfil the industrial expectations.

Abstract	Matching with POs, PSOs
Dialog flow, Chat bot, web app	<<PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2>>

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ABSTRACT

Educational apps, Chatbots, or conversational interfaces as they are also known, present a new way for individuals to interact with computer systems. Traditionally, to get a question answered by a software program involved using a search engine, or filling out a form. A chatbot allows a user to simply ask questions in the same manner that they would address a human. The most well known chatbots currently are voice chatbots: Alexa and Siri. However, chatbots are currently being adopted at a high rate on computer chat platforms. The technology at the core of the rise of the chatbot is natural language processing (“NLP”). Recent advances in machine learning have greatly improved the accuracy and effectiveness of natural language processing, making chatbots a viable option for many organizations. This improvement in NLP is firing a great deal of additional research which should lead to continued improvement in the effectiveness of chatbots in the years to come.

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LIST OF ABBREVIATIONS

ACRONYM

ABBREVIATION

CLS

-

Common Language Specification

CPU

-

Central Processing Unit

CHAPTER 1

INTRODUCTION

A chatbot, short for "chat robot," is a computer program designed to simulate human conversation through text or voice interactions. Chatbots are a subset of artificial intelligence (AI) and are often used for various purposes, such as customer support, information retrieval, entertainment, and more. They can be found on websites, messaging apps, social media platforms, and even integrated into hardware devices. Chatbots serve different purposes, including answering frequently asked questions, automating tasks, providing recommendations, and engaging users in conversation. Chatbots consist of several key components, including a user interface for interaction (text-based or voice-based), a natural language processing (NLP) engine to understand and interpret user inputs, and a backend database or knowledge base for retrieving and providing information.

1.1 PROJECT DETAILS

Dialogflow is a popular and widely used cloud-based platform for building conversational interfaces, including chatbots and voice-based applications. It is developed by Google and is part of the Google Cloud ecosystem. Dialogflow simplifies the process of creating natural language processing (NLP)-powered chatbots, making it accessible for developers and businesses to build intelligent and interactive conversational agents. Dialogflow uses advanced NLP techniques to understand and interpret user input in a human-like manner. It can recognize user intent, entities (key information in a sentence), and context, enabling more natural and context-aware conversations.

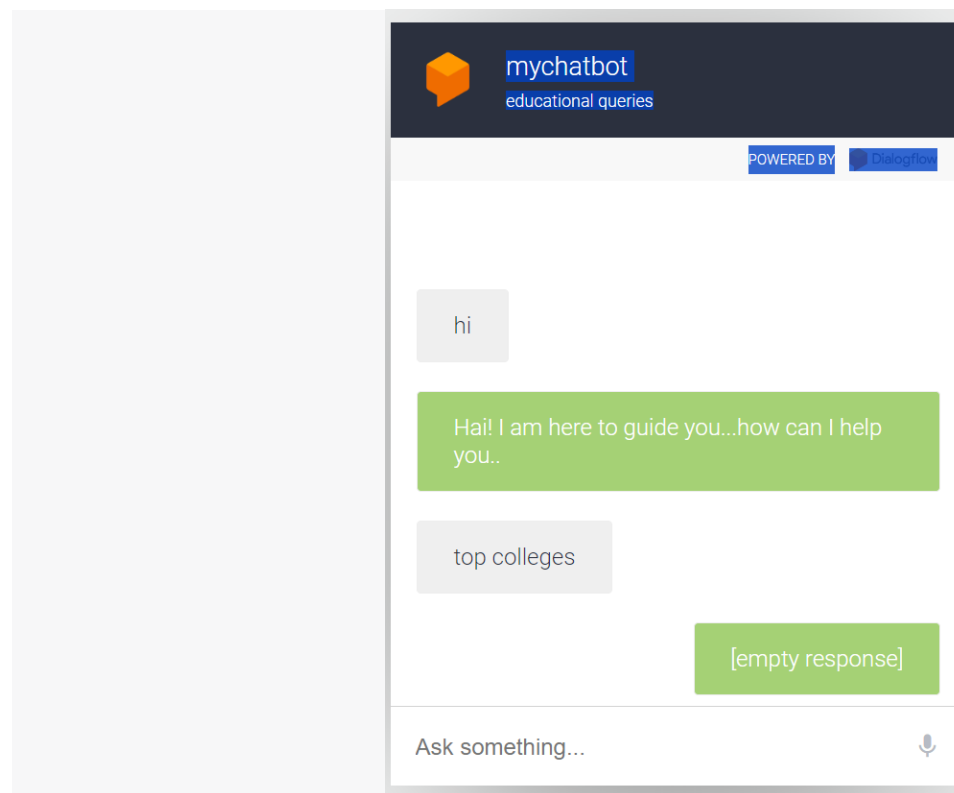


Figure 1.1

1.2 GOOGLE CLOUD SERVICES

Dialogflow offers pre-built agents for common use cases, such as small talk, appointment scheduling, and weather information. These agents can be customized to suit your specific needs, saving development time. You can integrate Dialogflow with various services and databases using webhooks. This enables your chatbot to retrieve and update data from external sources.

Storage and databases:

- Cloud Storage – Object storage with integrated edge caching to store unstructured data.
- Cloud SQL – Database as a Service based on MySQL, PostgreSQL and Microsoft SQL Server.
- Cloud Bigtable – Managed NoSQL database service.^[11]
- Cloud Spanner – Horizontally scalable, strongly consistent, relational database service.^[12]
- Cloud Datastore – NoSQL database for web and mobile applications.^[13]
- Persistent Disk – Block storage for Compute Engine virtual machines.^[14]
- Cloud Memorystore – Managed in-memory data store based on Redis and Memcached.^[15]
- Local SSD: High-performance, transient, local block storage.
- Filestore: High-performance file storage for Google Cloud users.^[16]
- AlloyDB: Fully managed PostgreSQL database service.^[17]

1.2.1 DESCRIPTION

The Dialogflow API is used to interact with the Dialogflow service, enabling developers to create, manage, and integrate conversational agents, such as chatbots or voice assistants, into their applications. Here's an overview of how the Dialogflow API works. Before using the Dialogflow API, you need to authenticate your application with Google Cloud. You'll typically use service account credentials (a JSON key file) to authenticate your app. Start by creating a Dialogflow agent or configuring an existing one. This involves defining intents (user actions or goals), entities (relevant data), responses, and setting up fulfillment logic. You can use Dialogflow's web-based interface or make API calls to configure the agent programmatically. You can use various programming languages and libraries to make HTTP requests to Dialogflow's REST API. These requests include user input (messages) that need to be processed by the agent. Typically, you'll use POST requests to send user messages. Your application receives responses from Dialogflow via the API. You can then display these responses to the user in your app, whether it's a web application, mobile app, or any other platform.

CHAPTER 2

LITERATURE SURVEY

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CHAPTER 3

EXISTING SYSTEM

Rule-Based System

This system is based on the simple method of decomposing the input text based on certain criteria and look for the presence of some keywords. These keywords when found are then transformed and reassembled according to the rules associated with them and certain assembly specifications.

These types of chatbots are not efficient in terms of answering questions whose patterns do not match with the rules that were used to train the chatbot.

Corpus-Based System

Due to inherent problems of hand-built rules, machine learning solutions are applied on corpus constructed from real-world data and hence the name, corpus-based chatbots.

These corpora can be categorized based on the type and aspects of dialogue interactions like written or spoken corpora, human-human(contains entries of interaction between humans) or human-machine corpora(entries consists of interactions between a human and machine), natural or unnatural corpora, etc.

Information Retrieval Based Chatbots

These bots are trained on a corpus of dialogue interactions, a set of queries along with their possible responses. From the set of available responses, this system ranks all the matching responses and gives as an output the most relevant response.

One major problem with retrieval-based chatbots is the semantic gap that exists between two object descriptions due to linguistically different representations.

Generation Based Chatbots

Rather than choosing the most appropriate response for a query from the available corpus, generation-based chatbots tend to generate their answers using an encoder-decoder framework, where the query is encoded in a vector representation given as an input to the decoder unit to generate the response.

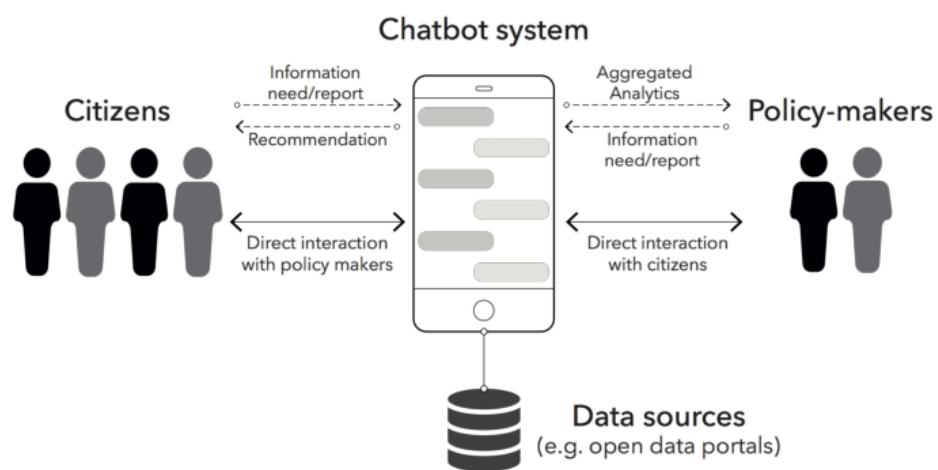


Figure 3.1

CHAPTER 4

PROPOSED SYSTEM

Dialogflow is Google's human-computer interaction developer which is based on natural language conversations. At The Bot Forge, Dialogflow is our platform of choice for chatbot construction.

There's three main reasons for why we're amongst companies such as Domino's and Ticketmaster who make Dialogflow their chatbot platform of choice.

1. **Flexible coding:** Thanks to Dialogflow's in-line code editor, the time taken to complete code-related tasks is quicker than with other platforms. The prime benefit here is that we're then able to spend more time perfecting the conversational experience.
2. **Scalability:** Whether you start with 1,000 or 100,000 users, the platform can scale to your needs. As Dialogflow is hosted on the Google Cloud Platform, this allows the potential to support a user base of hundreds of millions, if required.
3. **Inbuilt machine learning:** Arguably the biggest benefit of the platform in comparison to others is the availability of machine learning and natural language processing technologies. Dialogflow makes this possible by allowing us to extract data from a given conversation, in order to train our agents to understand user intents.

To ensure that we're using the right platform for our clients' needs, we continuously refresh our knowledge of other bot construction tools, such as The Microsoft Bot Framework. A benefit of using this platform from a developer's perspective is the availability of templates to choose from, which allow for a more time efficient development.

The IBM Watson Assistant is another platform that a developer may favour, as the testing the bot is simpler than it is on other competing platforms. If a priority is to feature your bot over a wide range of locations, Recast.AI may be a good option for its availability on 14 different platforms.

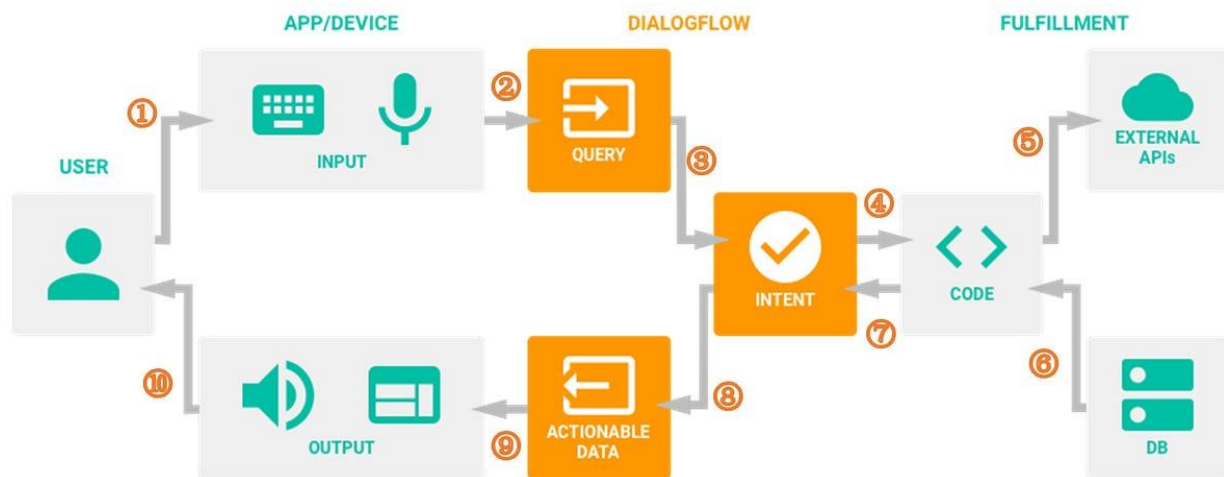


Figure 4.1

4.1 TRAINING AN CHAT-BOT

When your agent is trained, Dialogflow uses your training data to build machine learning models specifically for your agent. Each flow of your agent has its own model. This training data primarily consists of intents, intent training phrases, and entities referenced in a flow; which are effectively used as machine learning data labels. However, agent models are built using parameter prompt responses, state handlers, agent settings, and many other pieces of data associated with your agent.

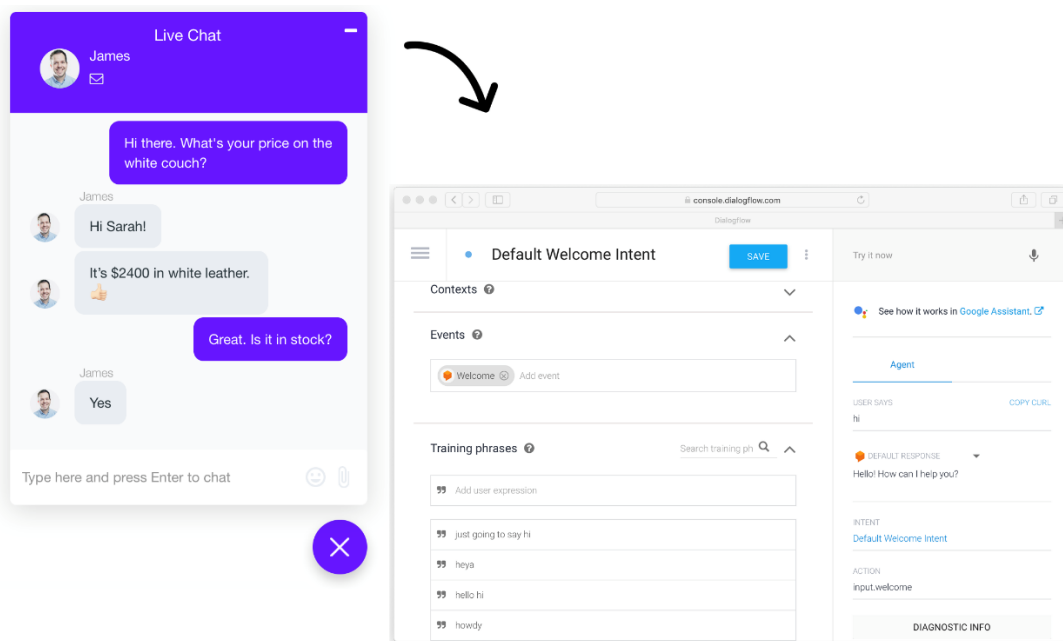


Figure 4.2

4.2 WORKING

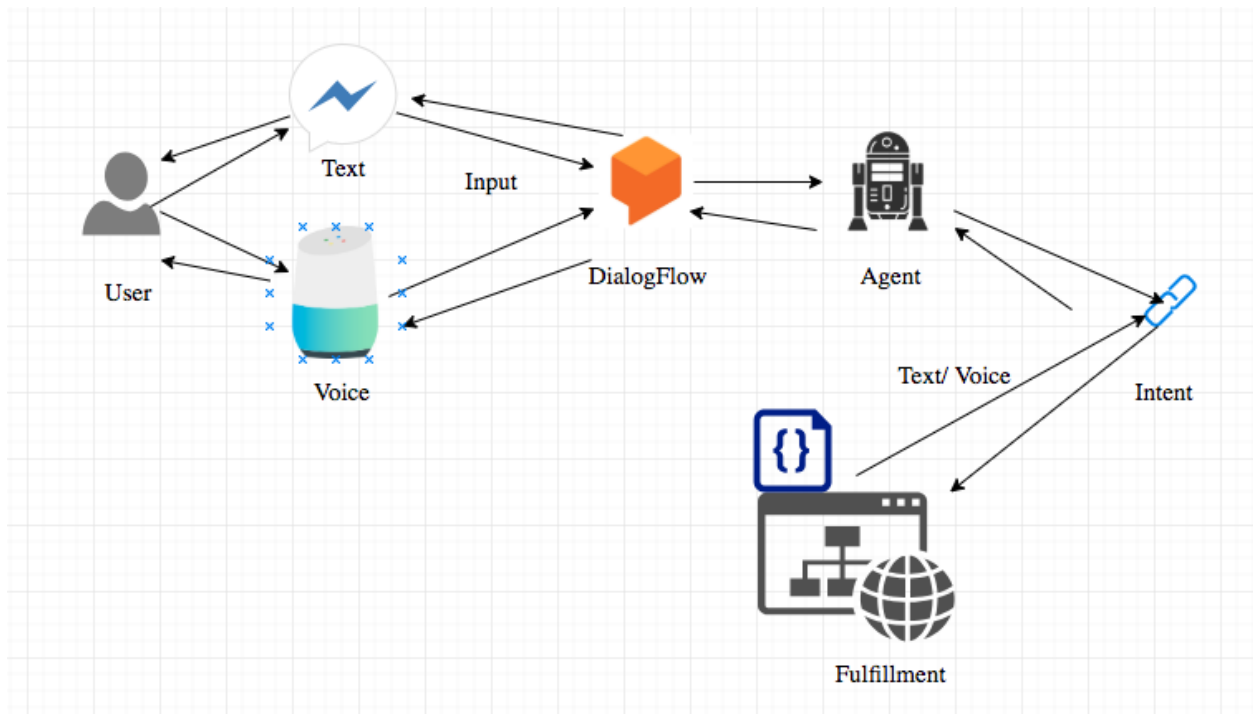


Figure 4.3

CHAPTER 5

COMPONENTS REQUIRED

DIALOG FLOW API:

Dialogflow (formerly known as *Api.ai*), is the platform owned by Google to build conversational agents. Instead of building a chatbot from scratch, Dialogflow makes it easier to build it in considerably less time and with bunch of Google features, including pre-build ML Models that can help you get started right away. Dialogflow also allows you to integrate your conversational agent with popular platforms like Google Assistant, Facebook Messenger, Twitter, Telegram and more. It also provides Web API to integrate the agent into Websites.

ANDROID STUDIO:

Android Studio is the official Integrated Development Environment (IDE) for android application development. Android Studio provides more features that enhance our productivity while building Android apps. Android Studio was announced on 16th May 2013 at the Google I/O conference as an official IDE for Android app development. It started its early access preview from version 0.1 in May 2013. The first stable built version was released in December 2014, starts from version 1.0.

CHAPTER 6

EXPERIMENTAL PROCESS

INTENTS TRAINING IN DIALOG FLOW:

To create an intent inside a Dialogflow bot, follow the steps below:

1. Select the desired chatbot.
2. Select the **Entities** option.
3. Enter the desired intent name.
4. Add many training phrases to trigger this intent.
5. Click the **Save** button.

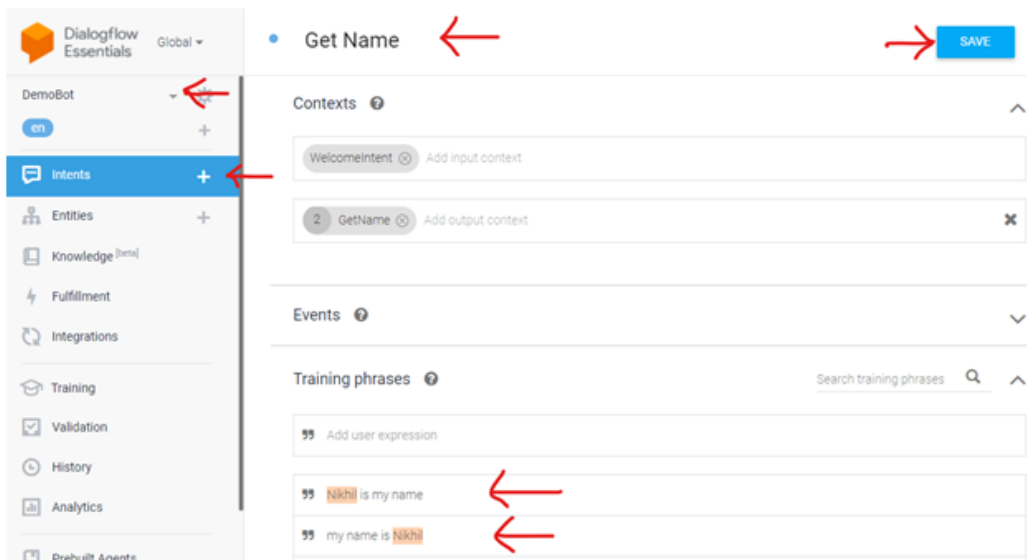


Figure 6.1

LINKING DIALOG FLOW WITH ANROID STUDIO:

You can send payload to dialogflow through chat screen and get text response from Dialogflow Agent. Kommunicate provides a ready to use Chat UI so only launching the chat screen is required in this step.

Here are the instructions for launching the chat with Dialogflow bot:

```
List<String> botList = new ArrayList(); botList.add("bot1"); //enter your  
integrated bot Ids
```

```
new KmChatBuilder(context).setChatName("Support")
```

```
.setBotIds(botList)
```

```
.launchChat(new KmCallback() {
```

```
@Override
```

```
public void onSuccess(Object message) {
```

```
Utils.printLog(context, "ChatTest", "Success : " + message);
```

```
}
```

```
@Override
```

```
public void onFailure(Object error) {
```

```
Utils.printLog(context, "ChatTest", "Failure : " + error);
```

```
}
```

```
});
```

CHAPTER 7

RESULT AND DISCUSSION

Students who attend the same class have different skills, interests, and abilities. That is why they need personal tutors, who can provide one-on-one lectures. Unfortunately, even some of the most expensive schools and colleges in the world are not able to provide this type of service. That is why chatbots are the most logical and affordable alternative for personal learning.

The project that involves Bill and Melissa Gates Foundation, Facebook and Summit public school, uses bots for basic lecturing. The idea is that chatbots can serve as the virtual advisers, who will adapt their work and curriculum to the students' abilities. This way, the students can follow their own learning pace.

When we talk about educational chatbots, this is probably the biggest concern of teachers and trade union organizations. The answer is no, chatbots won't take anyone's job. The truth is that they will take over the repetitive tasks and make a teacher's work more meaningful.

CHAPTER 8

CONCLUSION

Modern chatbots are trained to conduct very complex tasks, yet they can be easily built without coding. Most bots provide specific answers depending on the words and phrases people use, so the building process usually involves asking questions and generating possible outcomes.

There are dozens of platforms that allow teachers to create free chatbots for specific messaging apps. To make your bot more accessible to students, choose the platform that can connect to several communication channels at once. Snapchat, for example, can be used on Facebook Messenger, Slack, WeChat, Skype, and it can be easily deployed on the university or school website, by pasting a small code snippet onto the desired page.

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