VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI-590 018

A Project work Phase-II Report
on

"Cricket Chatbot using Dialogflow"

Submitted in partial fulfillment of the requirements for the VIII semester and award of the degree of ***Bachelor of Engineering in Computer Science and Engineering*** *of Visvesvaraya Technological University, Belagavi*

by

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2020-2021

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CERTIFICATE

Certified that the project work Phase - II entitled **“*Cricket Chatbot using Dialogflow*”** has been successfully carried out at **RNSIT,** by **ASHISH R** bearing USN 1RN17CS021**, CHAKRAVARTHY C** bearing USN 1RN17CS029, **CHANDAN RAJ N** bearing USN 1RN17CS030, **NISHITH R KASHYAP** bearing USN 1RN17CS059**,** bona fide students of **RNS Institute of Technology** in partial fulfillment of the requirements for the award of degree in **Bachelor of Engineering in Computer Science and Engineering** of **Visvesvaraya Technological University, Belagavi** during academic year 2020-2021. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project work Phase - II report has been approved as it satisfies the academic requirements in respect of project work for the said degree.

Signature of the Guide	Signature of the HoD	Signature of the Principal
Prof. Hemanth S	**Dr. Kiran P**	**Dr. M K Venkatesha**
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External Viva:

Name of the Examiners	**Signature with Date**
1.	
2.	

ABSTRACT

Cricket is one of the most beloved and watched sport, not just in India, but around the globe. For such a popular game, it is astounding that we cannot find a chatbot that would answer most of the queries of a true cricket fan. With cricket having a huge impact on majority of the population, it is necessary to have a bot that could provide the information needed. Due to the large amount of cricketing data spread all over the internet, it is difficult to find a single source to service all the requests. So, we have built this platform on Dialogflow, using Express JS library to respond to the user queries. This project emphasizes on making all the cricket information available on a single platform.

The history of conversation user interfaces is as old as modern computers. ELIZA was an early natural language processing computer system created from 1964 to 1966 at MIT Artificial Intelligence Laboratory. One type of natural language processing computer system are chatbots. A prominent version of conversation chatbots are question-answering systems, which are capable of understanding user questions and replying to them with an answer. For example, IBM's Watson is a question-answering system capable of answering the questions posed in natural language.

As part of building a chatbot, you preprocess data to create topics and then extract and save associated synonyms for given topics. This data is uploaded to Dialogflow Agent, and topics are uploaded in entities. Entities are Dialogflow's mechanism for identifying and extracting useful data from natural language inputs. With entities in place, you create intents in your agent that map user input to responses. In each intent, you define examples of user statements that can trigger the intent, what to extract from the statement, and how to respond. Dialogflow can connect to external systems on an intent-by-intent basis by using Fulfillment code, which is deployed as a webhook. During a conversation, fulfillment lets you use the information extracted by Dialogflow's natural language processing to generate dynamic responses or trigger actions on your backend.

ACKNOWLEDGMENT

At the very onset, we would like to place on record our gratefulness to all those people who have helped us in making this Technical seminar work a reality. Our Institution has played a paramount role in guiding us in the right direction.

We would like to profoundly thank the Management of RNS Institute of Technology for providing such a healthy environment for the successful completion of this seminar work.
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We would also like to thank our beloved Principal, Dr. M K Venkatesha, for providing the necessary facilities to carry out this work.

We are extremely grateful to our beloved HOD-CSE, Dr. Kiran P, for having accepted to patronize us in the right direction with all his wisdom.

We place our heartfelt thanks to all the Coordinators of the Project work. I would like to thank the internal guide Prof. Hemanth S, Associate Professor, for his continuous guidance and constructive suggestions for this work.

Last but not the least, we are thankful to all the staff members of Computer Science and Engineering Department for their encouragement and support throughout this work.

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CHAPTER 1

INTRODUCTION

The craze for Cricket in India is huge, and we consider cricketers as our role models. Many cricket fans in India spend hours in front of the television to watch a cricket match. Cricket matches in India are like grand feasts to the eyes and mind. Indians cannot separate themselves from Cricket. As this sport has different formats, it has a different fan base for each format. Some people love watching ODIs, while others enjoy Twenty-20. Test match is a traditional form of Cricket and lasts up to 5 days. Then there are also League Systems such as Indian Premier League (IPL), Big Bash League (BBL) etc. [1]

Despite Hockey being the national sport of the country, it is cricket which rules over the hearts of the citizens. It creates a lot of excitement and frenzy amongst the fans of the game. Cricket is like a religion in India and the players are considered to be demi-gods. It is the most-watched sport in India and people even miss their schools and offices when any major international match is happening.

Cricket in various formats is enjoyed by people all over the world as well. Even business tycoons are now investing in the game to cash in on the popularity.

The first games of cricket were played in the 16th century in England and are the national sport of England. Throughout the 19th century, it spread throughout the world. Cricket is extremely popular in India, England and Australia as well as in Sri Lanka, Pakistan, West Indies, Bangladesh, South Africa, etc. The governing body is the International Cricket Council or ICC that makes the rules.

Cricket attracts many people. Children play the game on the streets and in large open grounds. When cricket matches happen, the stadiums are filled with enthusiastic fans, and they cheer loud for their teams, which encourages the players. Many families sit in front of the TV and watch the whole game with many emotions and cheers. Today even women play cricket, and women’s cricket is slowly gaining popularity. [2]

This project is focused on building a chatbot to service requests from cricket fans. The technologies used include Dialogflow, Postgres SQL and Express JS. Dialogflow is a natural language understanding platform that makes it easy to design and integrate a conversational user interface into your mobile app, web application, device, bot, interactive voice response system, and so on. Using Dialogflow, you can provide new and engaging ways for users to interact with your product. Express JS responds to the intents as set by dialogflow. Webhook formulate the communication between dialogflow and express.

As part of building a chatbot, you preprocess data to create topics and then extract and save associated synonyms for given topics. This data is uploaded to Dialogflow Agent, and topics are uploaded in entities. Entities are Dialogflow's mechanism for identifying and extracting useful data from natural language inputs. With entities in place, you create intents in your agent that map user input to responses. In each intent, you define examples of user statements that can trigger the intent, what to extract from the statement, and how to respond.

Dialogflow can connect to external systems on an intent-by-intent basis by using Fulfillment code, which is deployed as a webhook. During a conversation, fulfillment lets you use the information extracted by Dialogflow's natural language processing to generate dynamic responses or trigger actions on your backend.

Natural Language API Toolkit (NLTK) is used to extract topics and associated policy text from the document. Then, you create a webhook API that queries the text associated with topics. Finally, you create a chatbot in Dialogflow that can carry on a conversation by using text or voice, and then uses fulfillment calls to the webhook API you created. Finally, you deploy a custom user interface, which interacts with the chatbot by using Dialogflow's JavaScript API.

CHAPTER 2
LITERATURE SURVEY

The number of sources that are available today across the internet to get cricket information is in abundance. Most of the information that we need about an ongoing series or maybe even the team statistics are available the ESPN official cricketing website. The main source that people resort to, to get live cricket scores is Cricbuzz. The facts about the current team rankings, player rankings can be found in the ICC official page. The thing about ICC website is that the certain data is not regularly updated, unlike ESPN.

Other way to gather the cricketing information is to ask a query to an already existing chatbot. Most of the cricket chatbots that are available on the internet can be used to get general information, like the live score or upcoming matches. Some of the mentionable chatbots that service a cricket fan include Roanuz, Cricket bot (Discord), Cricbuzz chatbot, Circle of Cricket and Machaao for Cricket among others.

Roanuz is a paid chatbot that you can integrate into your website on a pay-per-use basis. It provides an in-depth player and team stats, live score, statistics among other features. Other chatbots that are available on the Facebook messenger service the users with basic features like live scores and news. Other notable chatbot available is the hand-cricket chatbot available on the Discord platform.

The main disadvantage with these chatbots are that they are very platform specific. We must visit the respective platform to access that chatbot. This might serve to be a hindrance to the user. But with a chatbot that is available on multiple platforms, the user can query it on the go. So, the integration of the chatbot on various platform may bring the service to the user, rather than the user to the service.

CHAPTER 3

PROBLEM STATEMENT

3.1 EXISTING SYSTEM

Some of the mentionable chatbots that service a cricket fan include Roanuz, Cricket bot (Discord), Cricbuzz chatbot, Circle of Cricket and Machaao for Cricket among others. Roanuz is a paid chatbot that you can integrate into your website on a pay-per-use basis. It provides an in-depth player and team stats, live score, statistics among other features. Other chatbots that are available on the Facebook messenger service the users with basic features like live scores and news. Other notable chatbot available is the hand-cricket chatbot available on the Discord platform.

3.2 LIMITATIONS OF EXISTING SYSTEM

Disadvantage with the above mentioned chatbots are that they are very platform specific. We must visit the respective platform to access that chatbot. This might serve to be a hindrance to the user. But with a chatbot that is available on multiple platforms, the user can query it on the go. So, the integration of the chatbot on various platform may bring the service to the user, rather than the user to the service.

3.3 PROPOSED SYSTEM

The proposed system is focused on building a one-stop chatbot to service all kind of requests from cricket fans. By one-stop we mean the chatbot can respond to user requests by channeling data from various sources.

3.4 ADVANTAGES OF PROPOSED SYSTEM

The proposed chatbot can be integrated on multiple platforms. This aims at bringing the chatbot to the user rather than user to the chatbot.

CHAPTER 4

REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

- Simple and Conversational.
- Flexible Data Connections.
- Multi-Channel Capability.
- Easy Handling.

4.2 NON-FUNCTIONAL REQUIREMENT

- User Interface:
  a) The system shall maintain an easy to use interface across all functionality and for all users
  b) The clients' user interface should be compatible with all commonly used browsers, such as Internet explorer, Firefox, Google chrome and Safari.

- Scalability:
  a) The system shall be able to scale based on the number of users using the system.

- Security:
  a) The administrative system should be protected from unauthorized access.
  b) The database should protect from attacks and unauthorized access.
  c) The interface should be protected from attacks.
  d) All passwords should be stored as a secure hash of the administrator password.

- Third party interactions:
  a) The system should be able to interact with the Google spelling server, which handles the spelling.
  b) The system should be able to interact with the Google search server, which is used for the customized search on the admissions website.

- Portability:
  a) The system should run on a variety of operating systems that support the Java language.
  b) The system should run on a variety of hardware.

- Maintainability:
  a) The system should be easy to maintain.
  b) There should be a clear separation of HTML and Java interface code.
  c) There should be a clear separation between the interface and the business logic code.

- Exception handling:
  a) Exceptions should be reported effectively to the user if they occur.

- Ethics:
  a) The system shall not store or process any information about its users

4.3 HARDWARE REQUIREMENT

- Processor: Pentium4
- Processor Speed: 2.4 GHz or above
- RAM: 1GB or above
- Storage Space: 512MB
- Monitor Resolution: 1024x768

4.4 SOFTWARE REQUIREMENT

- Operating System: Windows 10
- IDE: Visual Studio Code
- Tech Stack: Node JS, Express

CHAPTER 5

SYSTEM DESIGN

5.1 SYSTEM ARCHITECTURE

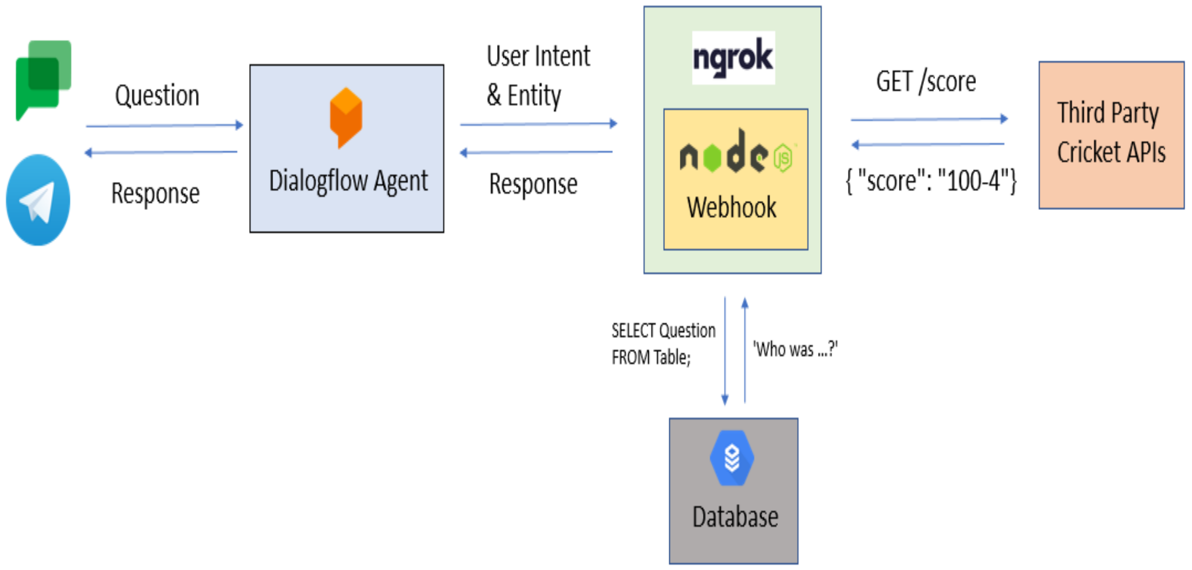


Figure 4.1. Working of the proposed solution

The above diagram shows the flow of data and queries across the system to service the user. Telegram/ GChat acts as a UI tool for the user to input his queries. This query is then sent to the dialogflow agent, which extracts the required keywords and sends it to the NodeJS server that is actively running on the Ngrok server. Webhooks are used as a communication tool between dialogflow agent and backend service. NodeJS receives this and satisfies the fulfillments. NodeJS requests either the database or third-party APIs depending upon the requirements. The computed result is sent back to the dialogflow agent, which sends the response back to the user

CHAPTER 6

METHODOLOGY

6.1. DATA GATHERING

As chatbots continue to be in high demand for companies who want to automate or provide 24x7 customer service, many still struggle with understanding what is necessary to get a chat solution off the ground. Simply put, AI needs data. However, not just any data will do.

When you build a chatbot, you must train it to understand the questions or requests that are most likely to be posed to the solution. This is the most common misunderstanding. Many organizations have plenty of "data" in the form of answers that they wish to provide within a chatbot. However, they often lack the most crucial data needed for training a chatbot: examples of how users express their goals and needs (intents).

Data from dissimilar channels is generally not suitable. The primary reason is that people express themselves very different when they speak, compared to how they type. (And people express themselves differently over email vs. text message, etc.). Obtaining enough training data can be a challenge, especially in the early phases of chatbot design. There are essentially five options you can choose from.

Without appropriate planning, the less preferable approaches often result in unpredictable or poor performance. Sometimes these options are unavoidable, so read the caveats and be prepared for some immediate improvement phases. A bot that is not equipped to handle the range of requests it encounters from real-world users usually does not deliver business value (and it really frustrates users).

The data to respond to the queries in this project are fetched from various sources. Some of the data has been fetched from third-party cricket APIs. For fetching historic data, we have used various databases that are available. Though most of the data were available from these sources, for additional information we resorted to web scraping.

6.2. PRE-PROCESSING

Data preprocessing is a crucial step that helps enhance the quality of data to promote the extraction of meaningful insights from the data. Data preprocessing in refers to the technique of preparing (cleaning and organizing) the raw data to make it suitable for a building and training models. In simple words, data preprocessing is a data mining technique that transforms raw data into an understandable and readable format.

The data we get from scraping the web is in form of a HTML page. This page must be parsed and only the required information should be extracted. The data received from the third-party APIs are in the form of JSON, which must be parsed too.

As part of building a chatbot, you preprocess data to create topics and then extract and save associated synonyms for given topics. This data is uploaded to Dialogflow Agent, and topics are uploaded in entities. Entities are Dialogflow's mechanism for identifying and extracting useful data from natural language inputs. With entities in place, you create intents in your agent that map user input to responses. In each intent, you define examples of user statements that can trigger the intent, what to extract from the statement, and how to respond.

6.3 DIALOGFLOW

Dialogflow is a natural language understanding platform that makes it easy to design and integrate a conversational user interface into your mobile app, web application, device, bot, interactive voice response system, and so on. Using Dialogflow, you can provide new and engaging ways for users to interact with your product. Dialogflow can analyze multiple types of input from the users, including text or audio inputs (like from a phone or voice recording). It can also respond to your customers in a couple of ways, either through text or with synthetic speech. Dialogflow takes care of the Natural Language Processing part of the model. It takes in the user queries as input and tries to match it with the available intents and entities. An intent categorizes an end-user's intention for one conversation turn. Each intent parameter has a type, called the entity type, which dictates exactly how data from an end-user expression is extracted.

These intents and entities are pre- defined by the developer and dialogflow takes care of grouping query with the most accurate intent available.

Recently, Q&A chatbots have developed significantly with the introduction of products such as Siri, Cortana, and Google Assistant. A typical conversational bot system architecture is outlined in figure 4.1.

The system architecture has the following components

- Multichannel integration: Any conversational interface connects with multiple channels, which can be in both voice and text format.
- Fulfillment interface: No conversation interface system is complete without a robust fulfillment interface, which is required to connect virtual agents to external systems. This interface is required to connect with external systems to fetch dynamic information to continue or fulfill a conversation.
- Conversation management: This component is the heart of interface and typically provides the following functionality:
  - Speech-to-Text (STT) and Text-to-Speech (TTS): Conversation interfaces have the ability to interact with speech and text.
  - Virtual agent: Agents are responsible for managing the flow of the conversation based on the intent or motivation extracted from user conversation. A good conversation interface has an agent system that can handle linear and nonlinear conversations.

Dialogflow is an end-to-end, build-once, and deploy-everywhere development suite for creating conversational interfaces for websites, mobile apps, popular messaging platforms, and Internet of Things (IoT) devices. You can use it to build interfaces, such as chatbots and conversational interactive voice response (IVR), that enable natural and rich interactions between your users and your business.

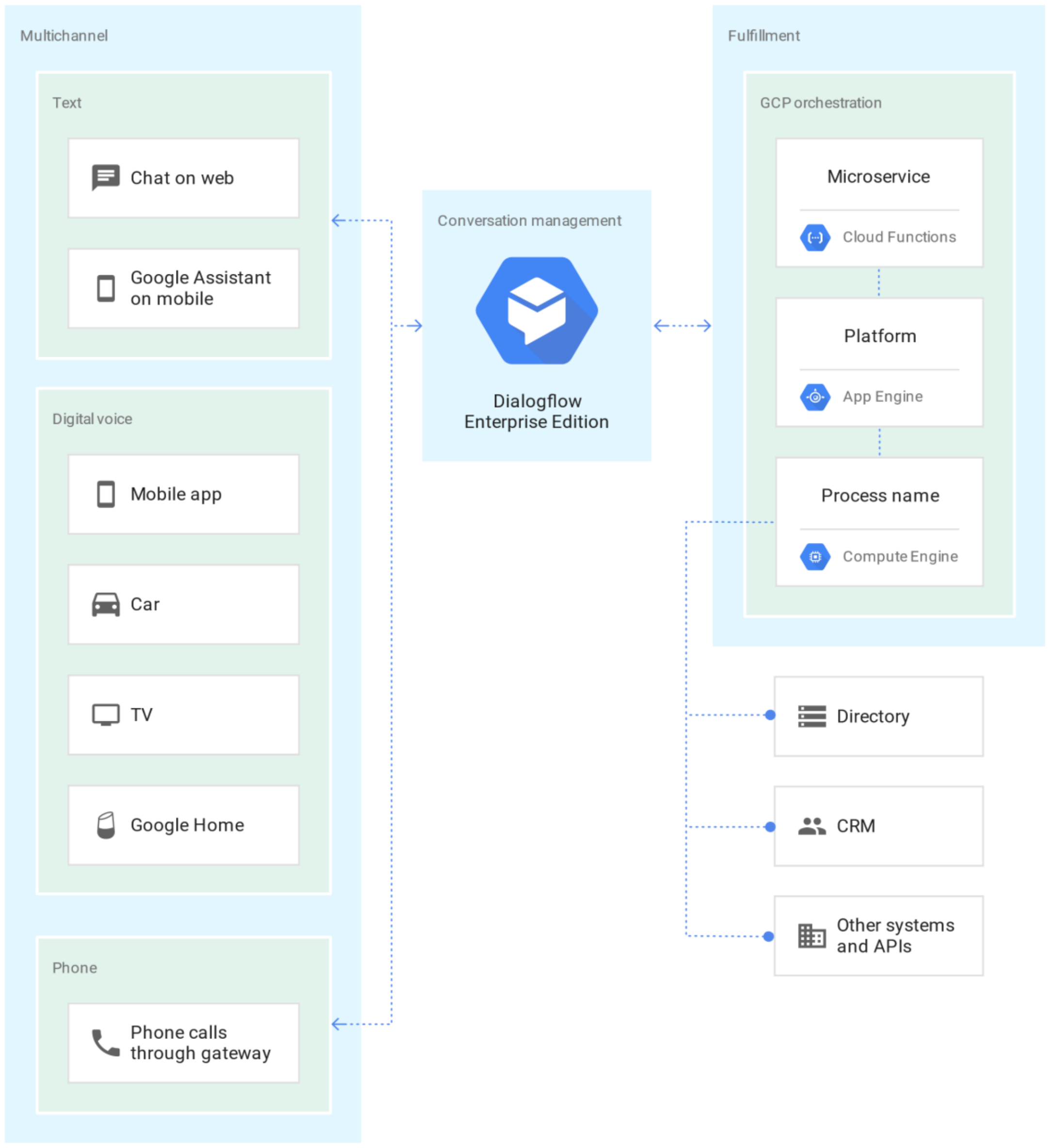


Fig 6.1 Dialogflow Architecture

Finally, you deploy a custom user interface, which interacts with the chatbot by using Dialogflow's JavaScript API.

6.4 FULFILLMENTS USING WEBHOOKS

A Webhook is a simple HTTP callback that gets triggered based on some event. These events are defined by the developers and are triggered when a query reaches the dialogflow agent. In Dialogflow, fulfillment is a service, app, feed, conversation, or other logic that can resolve a user request. For this setup, we provide a webhook as a backend service that can receives the required parameters from the intent and sends it to the Node JS server that is running on the background. We can cut the cost of using the inline editor provided by Google in Dialogflow, by just having a backend server running and providing this webhook to Dialogflow agent.

6.4.1 Webhook service requirements

The following requirements must be met by your webhook service:

1. It must handle HTTPS requests. HTTP is not supported. If you host your webhook service on Google Cloud Platform using a Compute or Serverless Computing solution, see the product documentation for serving with HTTPS. For other hosting options, see Get an SSL certificate for your domain.
2. Its URL for requests must be publicly accessible.
3. It must handle POST requests with a JSON WebhookRequest body.
4. It must respond to WebhookRequest requests with a JSON WebhookResponse body.

6.4.2 Webhook request

When an intent configured for fulfillment is matched, Dialogflow sends an HTTPS POST webhook request to your webhook service. The body of this request is a JSON object with information about the matched intent.

In addition to the end-user query, many integrations also send some information about the end-user as well. For example, an ID to uniquely identify the user. This information can be accessed via the originalDetectIntentRequest field in the webhook request, which will contain the information sent from the integration platform.

6.4.3 Webhook response

Once your webhook receives a webhook request, it needs to send a webhook response. The body of this response is a JSON object with the following information:

- The response that Dialogflow returns to the end-user.
- Updates to contexts active for the conversation.
- A follow-up event to trigger an intent match.
- A custom payload to be sent to the integration or detect intent client

The following limitations apply to your response:

- The response must occur within 10 seconds for Google Assistant applications or 5 seconds for all other applications, otherwise the request will time out.
- The response must be less than or equal to 64 KiB in size.

4.5. PROCESSING

Node.js is an open-source, Server side platform & cross runtime environment platform which allows you to build backend and front-end applications using JavaScript.

Node JS is popular for backend applications as it supports a huge number of plugins and better spin-up times

An intent categorizes end-users intention for one conversation turn. For each agent, you can define many intents. When an end-user writes or says something, referred to as an end-user expression, Dialogflow matches the end-user expression to the best intent in your agent.

Once the required intent is set by the dialogflow, this triggers an event in the backend service. Dialogflow triggers the fulfilment that matches with the recognized intent. This is where Express JS comes into picture. The requests received are fulfilled based on the fulfillment functions written to take care of these. The type of processing that needs to be done depends upon the source from which we obtain the data. The different sources include:

6.5.1 Database

In our application, we have used the Postgres SQL to store the data in the form of a database. Once connected with the Node JS client, data can be fetched directly using SQL queries. Express JS on receiving the data, performs the required operation on the fetched data and sends it back to the dialogflow agent via the webhook. We have used the IPL dataset, ODI matches datasets that are available on Kaggle among other datasets in this application.

6.5.2 Third-Party APIs

Most of the general data to answer the requests can be serviced using the various third-party APIs that are available. We usually require a key provided by the API providers to request data from them. The response from the APIs are in JSON format and the required data must be extracted from the response message and further used to service the request. Some of the third-party APIs that we have used include sportsmonk, cricapi and newsapi.

6.5.3 Web Scraping

Web scraping is the process of using bots to extract content and data from a website. Unlike screen scraping, which only copies pixels displayed onscreen, web scraping extracts underlying HTML code, and, with it, data stored in a database. The scraper can then replicate entire website content elsewhere. Web scraping isn’t the most conventional form of obtaining data from the internet. In fact, most of the sites find it illegal to extract data using this method. Before using any website, we need to read through their terms and condition to make sure that the data can be scrapped. We used the npm libraries Axios and Cheerio to get data using this method. The Axios get method when called on an URL, fetches the entire underlying HTML script. We then can use Cheerio to extract only the required information.

6.6. SENDING BACK THE DATA

Once all the computations are done and the results are ready, Node JS now sends the response message back to the dialogflow agent. This message can be of different forms. It can be text, a card, a chart or even just an image. They can be styled based on the requirement and the platform.

In case the response doesn’t reach the dialogflow agent within the timeout window, the default/fallback response specified for the intent will be sent to the user.

6.6.1 Rich Responses

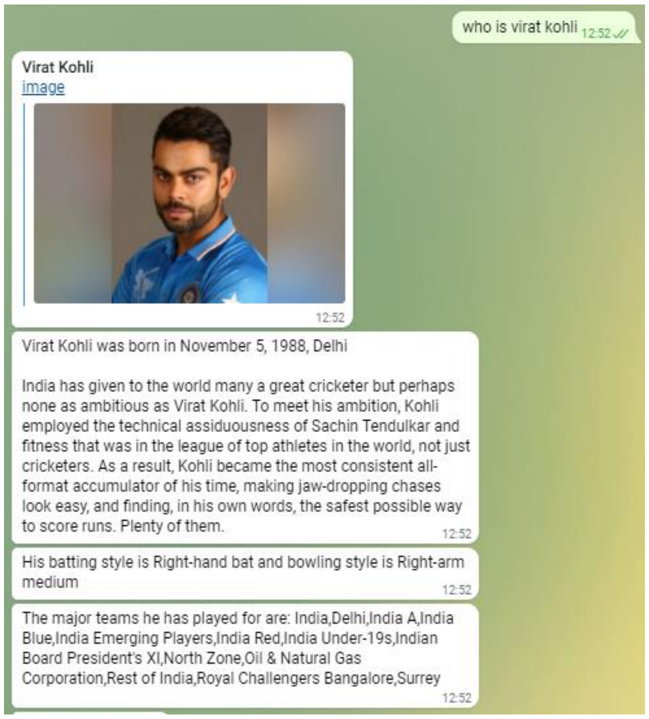
Many of the integration platforms support platform-specific rich response messages. These messages can be used to provide the end-user with more than just text responses. There are a variety of response types to choose from. For example, you can show images, play audio, or provide buttons. Each platform supports a subset of the available response types, as mentioned below:

i. Text responses
ii. Image responses
iii. Card responses
iv. Quick reply responses
v. Synthesize speech responses
vi. Play audio responses
vii. Custom payload response

CHAPTER 7

RESULT ANALYSIS

Here are a few screenshots of the project under use:



who is virat kohli 12:52

Virat Kohli
image

12:52

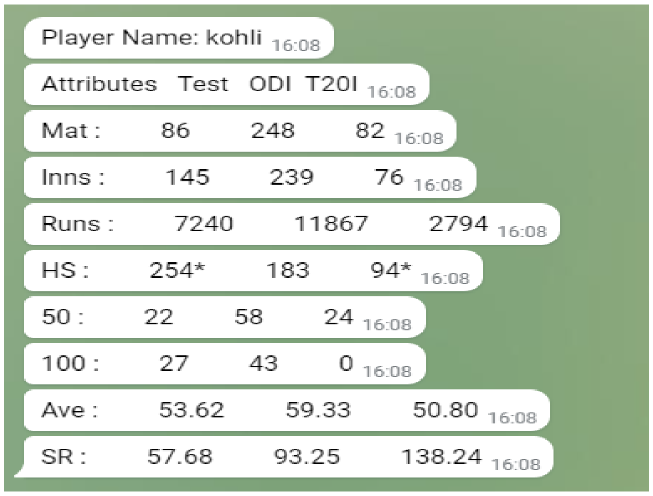
Virat Kohli was born in November 5, 1988, Delhi

India has given to the world many a great cricketer but perhaps none as ambitious as Virat Kohli. To meet his ambition, Kohli employed the technical assiduousness of Sachin Tendulkar and fitness that was in the league of top athletes in the world, not just cricketers. As a result, Kohli became the most consistent all-format accumulator of his time, making jaw-dropping chases look easy, and finding, in his own words, the safest possible way to score runs. Plenty of them. 12:52

His batting style is Right-hand bat and bowling style is Right-arm medium 12:52

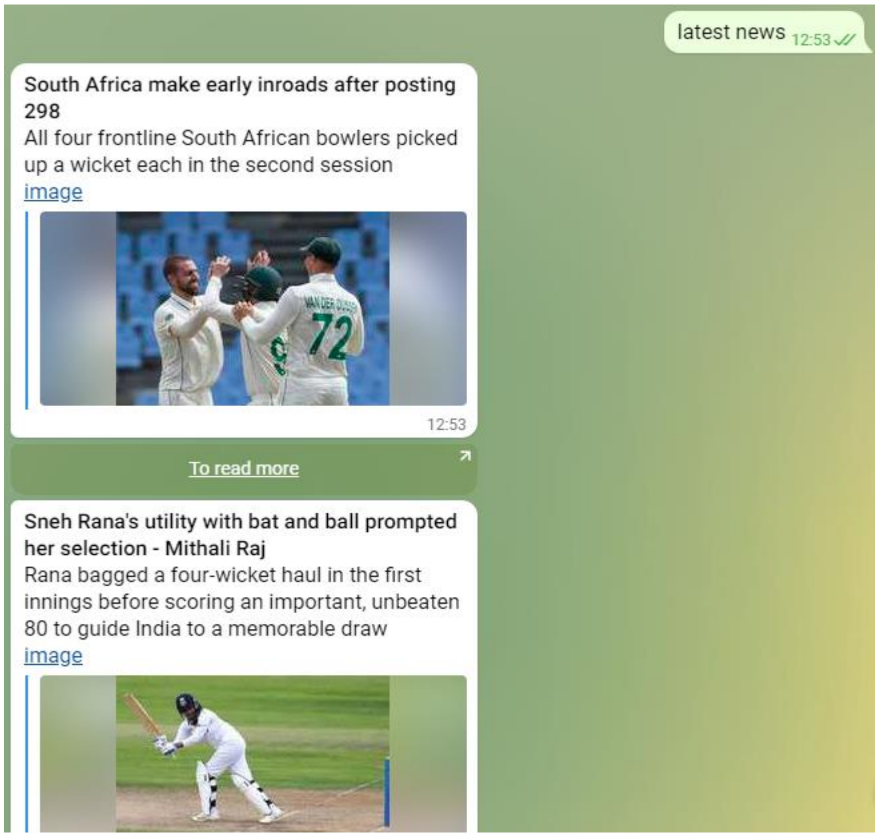
The major teams he has played for are: India,Delhi,India A,India Blue,India Emerging Players,India Red,India Under-19s,Indian Board President's XI,North Zone,Oil & Natural Gas Corporation,Rest of India,Royal Challengers Bangalore,Surrey 12:52

Fig 7.1 Details about a player



```
Player Name: kohli 16:08
Attributes  Test  ODI  T20I 16:08
Mat :      86     248     82 16:08
Inns :      145     239     76 16:08
Runs :      7240     11867     2794 16:08
HS :      254*     183     94* 16:08
50 :      22     58     24 16:08
100 :      27     43     0 16:08
Ave :      53.62     59.33     50.80 16:08
SR :      57.68     93.25     138.24 16:08
```

Fig 7.2 In-depth details about a player

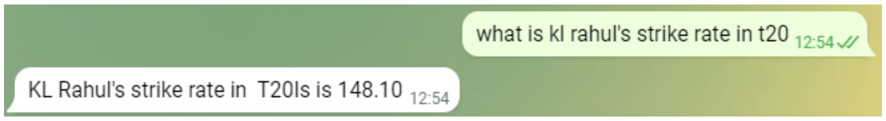

latest news 12:53

South Africa make early inroads after posting 298
All four frontline South African bowlers picked up a wicket each in the second session
image
12:53

To read more

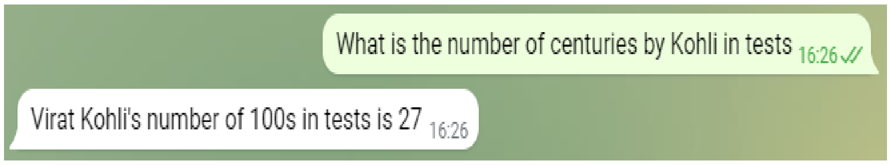
Sneh Rana's utility with bat and ball prompted her selection - Mithali Raj
Rana bagged a four-wicket haul in the first innings before scoring an important, unbeaten 80 to guide India to a memorable draw
image

Fig 7.3 Latest cricketing news


what is kl rahul's strike rate in t20 12:54

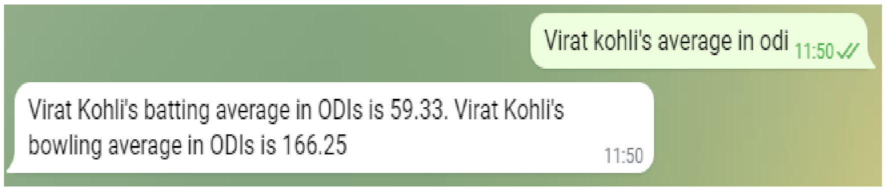
KL Rahul's strike rate in T20Is is 148.10 12:54

Fig 7.4 Player specific statistics


What is the number of centuries by Kohli in tests 16:26

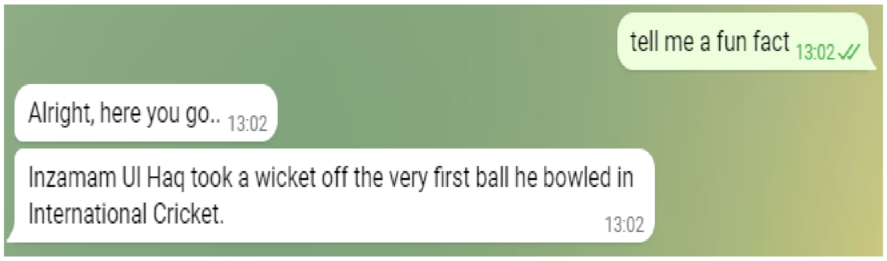
Virat Kohli's number of 100s in tests is 27 16:26

Fig 7.5 Player specific statistics


Virat kohli's average in odi 11:50

Virat Kohli's batting average in ODIs is 59.33. Virat Kohli's bowling average in ODIs is 166.25 11:50

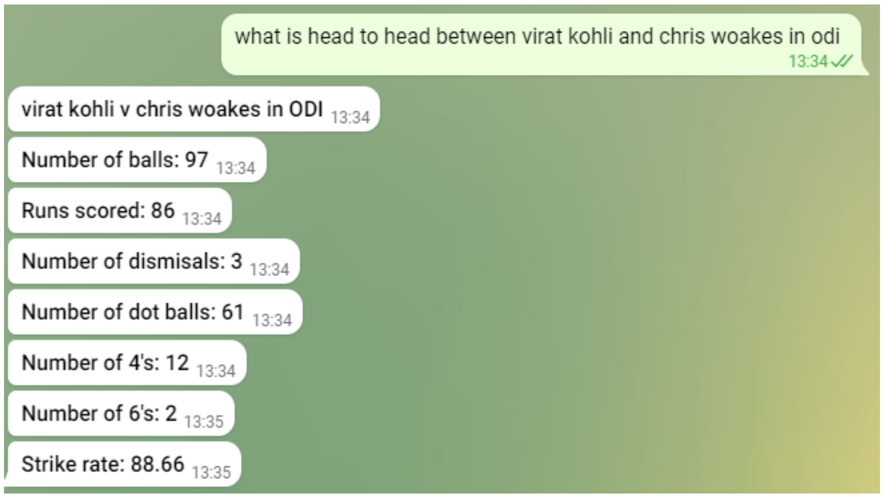
Fig 7.6 Player specific statistics


tell me a fun fact 13:02

Alright, here you go.. 13:02

Inzamam Ul Haq took a wicket off the very first ball he bowled in International Cricket. 13:02

Fig 7.7 Cricketing fun facts


what is head to head between virat kohli and chris woakes in odi 13:34

virat kohli v chris woakes in ODI 13:34

Number of balls: 97 13:34

Runs scored: 86 13:34

Number of dismisals: 3 13:34

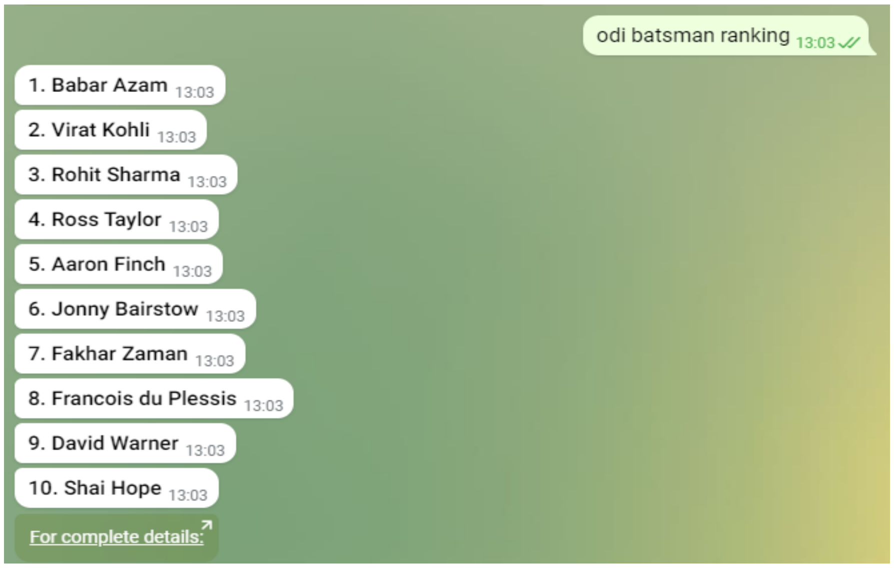
Number of dot balls: 61 13:34

Number of 4's: 12 13:34

Number of 6's: 2 13:35

Strike rate: 88.66 13:35

Fig 7.8 Player head-to-head stats


odi batsman ranking 13:03

1. Babar Azam 13:03

2. Virat Kohli 13:03

3. Rohit Sharma 13:03

4. Ross Taylor 13:03

5. Aaron Finch 13:03

6. Jonny Bairstow 13:03

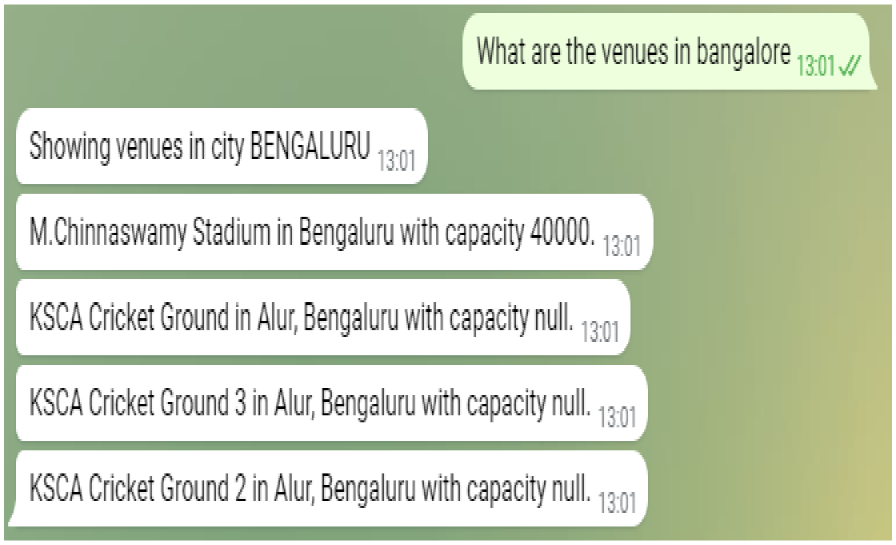
7. Fakhar Zaman 13:03

8. Francois du Plessis 13:03

9. David Warner 13:03

10. Shai Hope 13:03

Fig 7.9 ICC Batsmen ODI ranking


What are the venues in bangalore 13:01

Showing venues in city BENGALURU 13:01

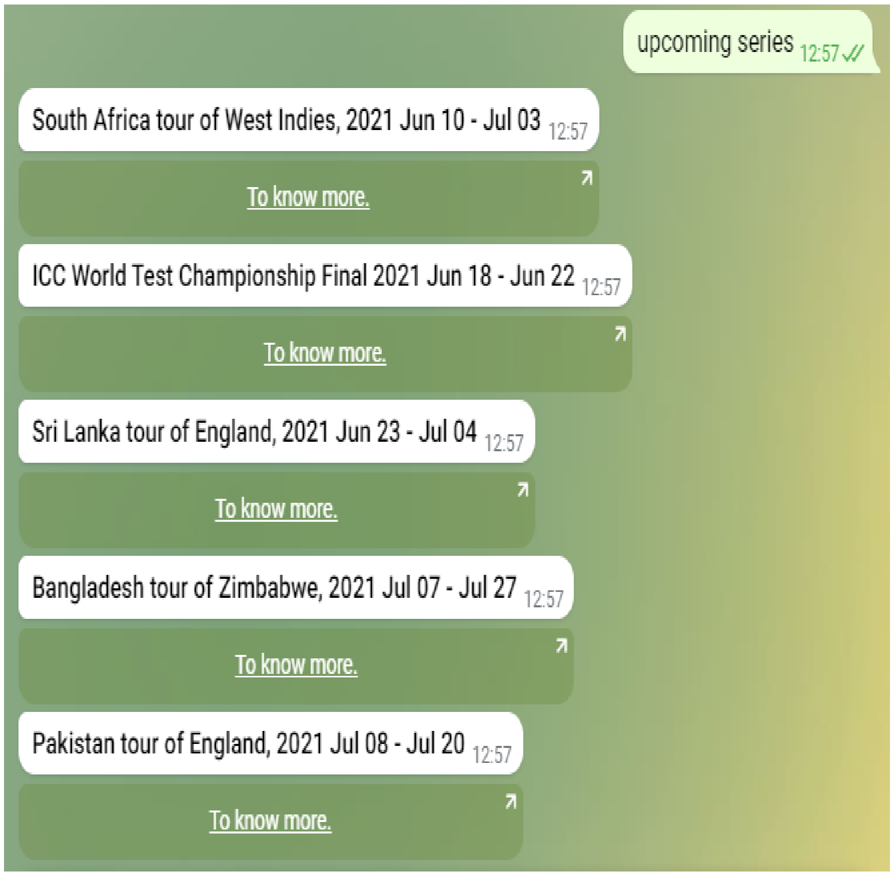
M.Chinnaswamy Stadium in Bengaluru with capacity 40000. 13:01

KSCA Cricket Ground in Alur, Bengaluru with capacity null. 13:01

KSCA Cricket Ground 3 in Alur, Bengaluru with capacity null. 13:01

KSCA Cricket Ground 2 in Alur, Bengaluru with capacity null. 13:01

Fig 7.10 Venue in a city


upcoming series 12:57

South Africa tour of West Indies, 2021 Jun 10 - Jul 03 12:57

To know more.

ICC World Test Championship Final 2021 Jun 18 - Jun 22 12:57

To know more.

Sri Lanka tour of England, 2021 Jun 23 - Jul 04 12:57

To know more.

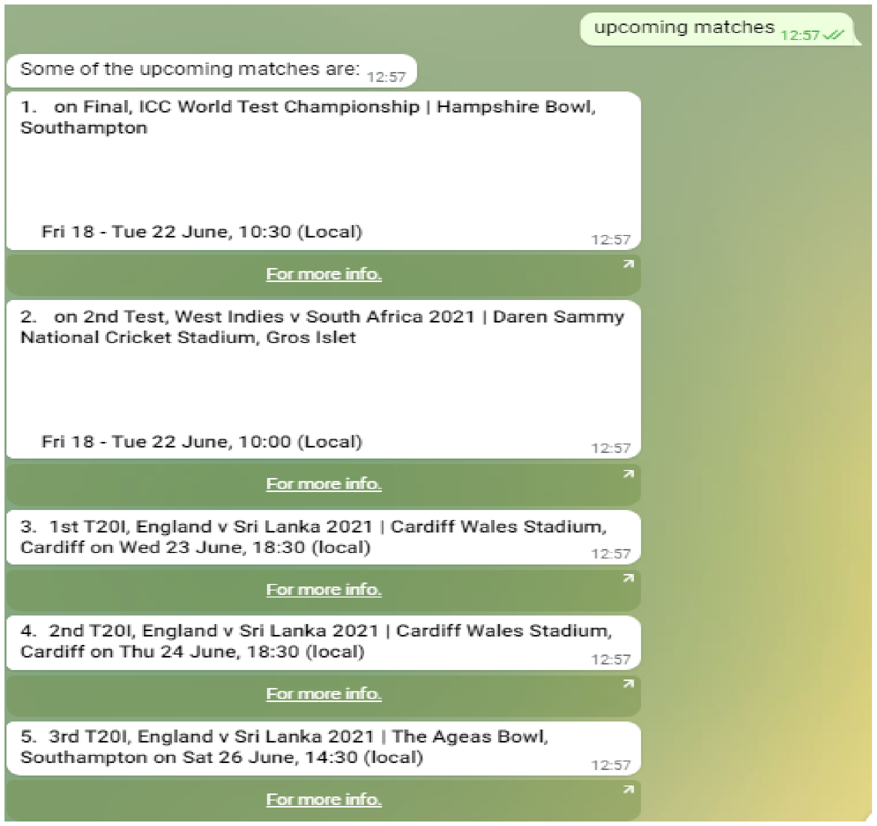
Bangladesh tour of Zimbabwe, 2021 Jul 07 - Jul 27 12:57

To know more.

Pakistan tour of England, 2021 Jul 08 - Jul 20 12:57

To know more.

Fig 7.11 Upcoming series



upcoming matches 12:57

Some of the upcoming matches are: 12:57

1. on Final, ICC World Test Championship | Hampshire Bowl, Southampton

Fri 18 - Tue 22 June, 10:30 (Local) 12:57

For more info.

2. on 2nd Test, West Indies v South Africa 2021 | Daren Sammy National Cricket Stadium, Gros Islet

Fri 18 - Tue 22 June, 10:00 (Local) 12:57

For more info.

3. 1st T20I, England v Sri Lanka 2021 | Cardiff Wales Stadium, Cardiff on Wed 23 June, 18:30 (local) 12:57

For more info.

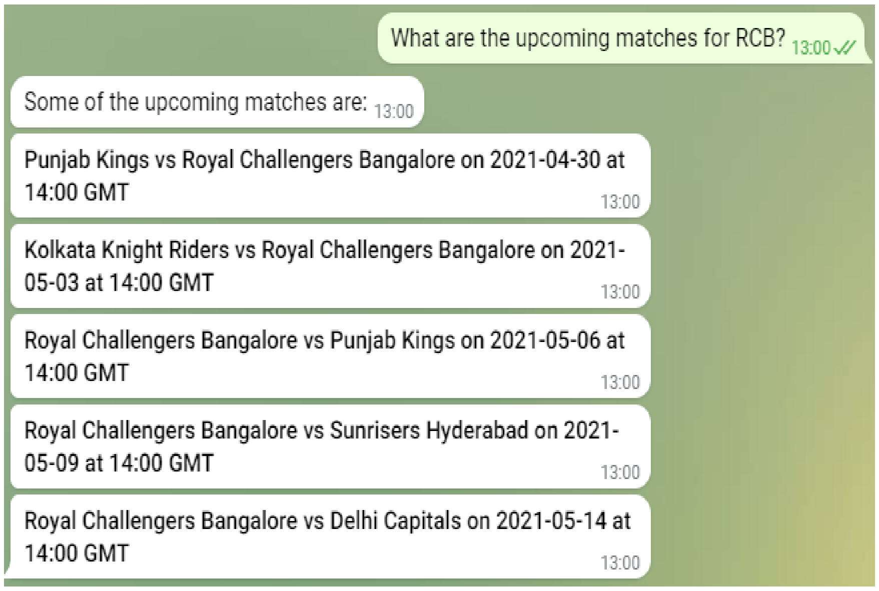
4. 2nd T20I, England v Sri Lanka 2021 | Cardiff Wales Stadium, Cardiff on Thu 24 June, 18:30 (local) 12:57

For more info.

5. 3rd T20I, England v Sri Lanka 2021 | The Ageas Bowl, Southampton on Sat 26 June, 14:30 (local) 12:57

For more info.

Fig 7.12 Upcoming matches



What are the upcoming matches for RCB? 13:00

Some of the upcoming matches are: 13:00

Punjab Kings vs Royal Challengers Bangalore on 2021-04-30 at 14:00 GMT 13:00

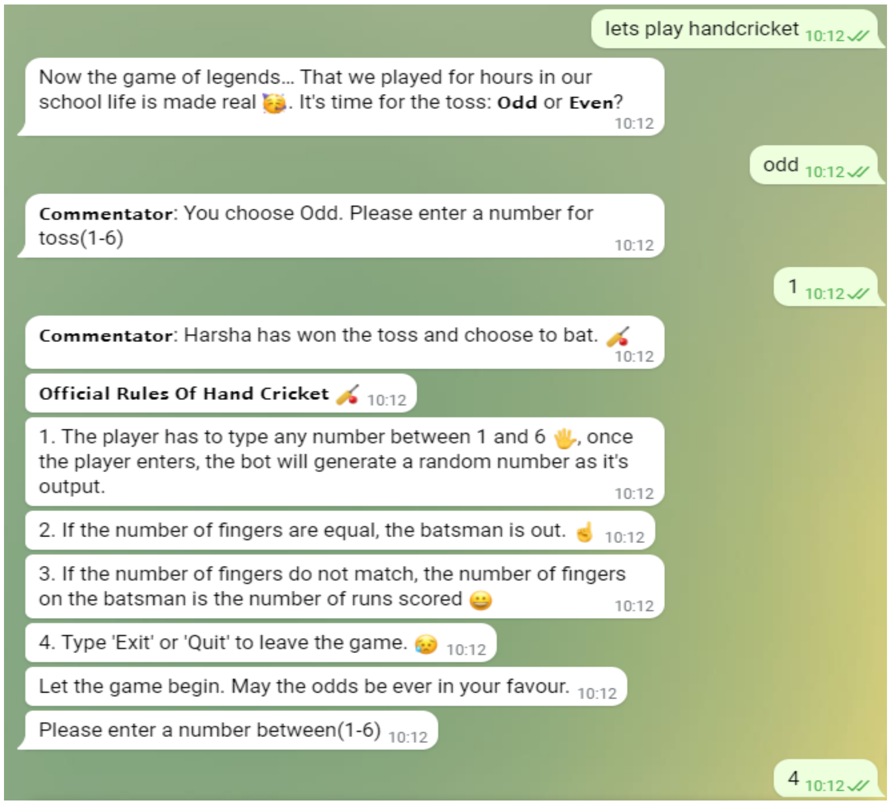
Kolkata Knight Riders vs Royal Challengers Bangalore on 2021-05-03 at 14:00 GMT 13:00

Royal Challengers Bangalore vs Punjab Kings on 2021-05-06 at 14:00 GMT 13:00

Royal Challengers Bangalore vs Sunrisers Hyderabad on 2021-05-09 at 14:00 GMT 13:00

Royal Challengers Bangalore vs Delhi Capitals on 2021-05-14 at 14:00 GMT 13:00

Fig 7.13 Upcoming matches for a particular team



lets play handcricket 10:12

Now the game of legends... That we played for hours in our school life is made real 🥳. It's time for the toss: **Odd** or **Even**? 10:12

odd 10:12

Commentator: You choose Odd. Please enter a number for toss(1-6) 10:12

1 10:12

Commentator: Harsha has won the toss and choose to bat. 🏏 10:12

Official Rules Of Hand Cricket 🏏 10:12

1. The player has to type any number between 1 and 6 🖐, once the player enters, the bot will generate a random number as it's output. 10:12

2. If the number of fingers are equal, the batsman is out. ☝ 10:12

3. If the number of fingers do not match, the number of fingers on the batsman is the number of runs scored 😀 10:12

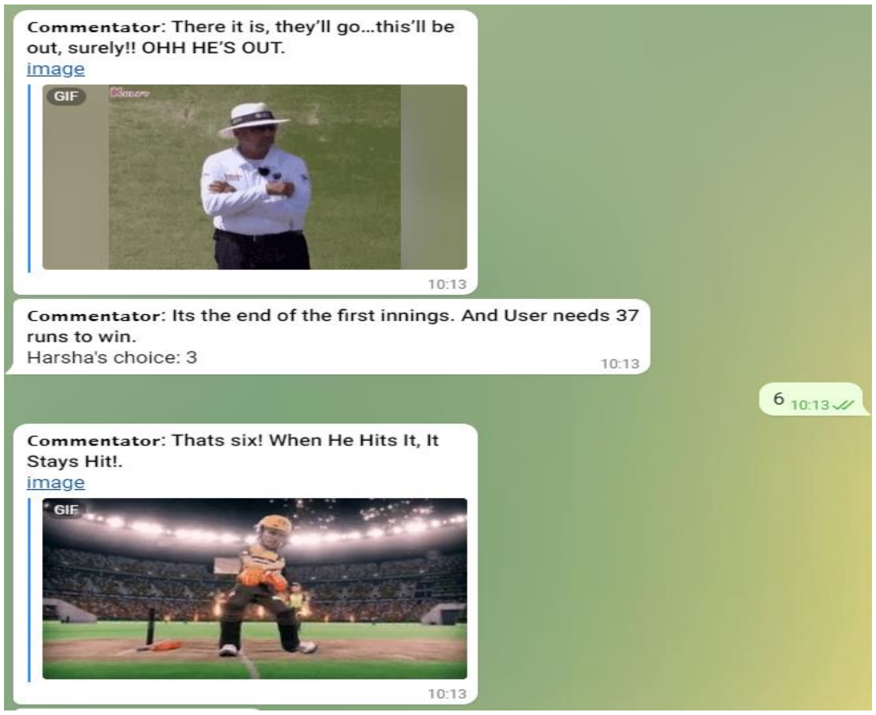
4. Type 'Exit' or 'Quit' to leave the game. 😥 10:12

Let the game begin. May the odds be ever in your favour. 10:12

Please enter a number between(1-6) 10:12

4 10:12

Fig 7.14 Hand-cricket game



Commentator: There it is, they'll go...this'll be out, surely!! OHH HE'S OUT.
image
GIF
10:13

Commentator: Its the end of the first innings. And User needs 37 runs to win.
Harsha's choice: 3 10:13

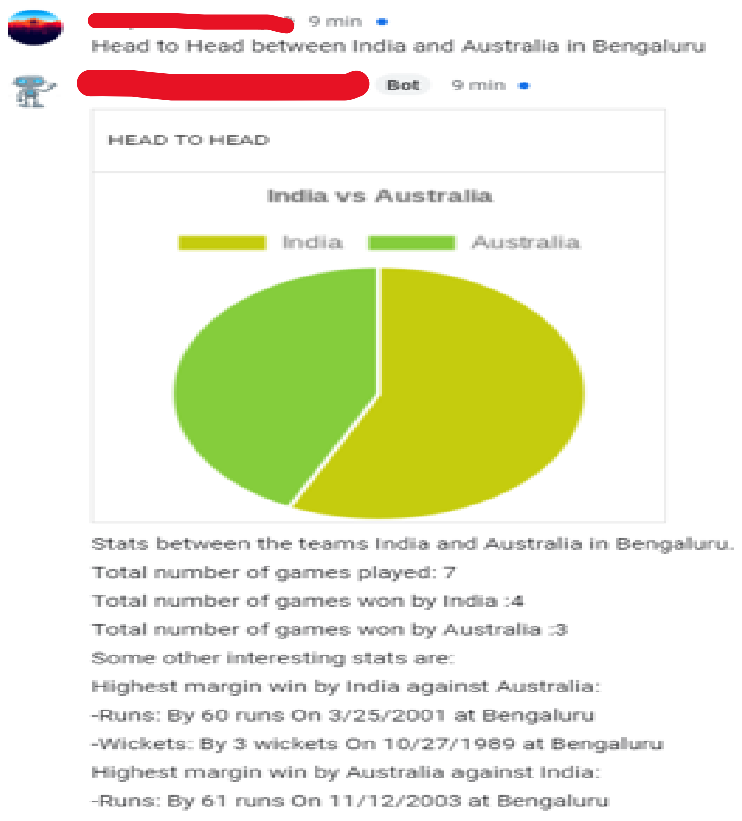
6 10:13

Commentator: Thats six! When He Hits It, It Stays Hit!.
image
GIF
10:13

Fig 7.15 Hand-cricket game

The common question that would pop up in any users mind is, "What is the need of this chatbot if I can just google these?". We have certain screenshots that prove that our chatbot provides users with the answers they are looking for that cannot be easily found in google. In some cases, the user would have to navigate through multiple websites just to get an answer to their queries. While, in other cases, they might not find answers to what they were even looking for. Below are a set of screenshots that compares the task of finding the finding answers to certain queries on our chatbot and google.

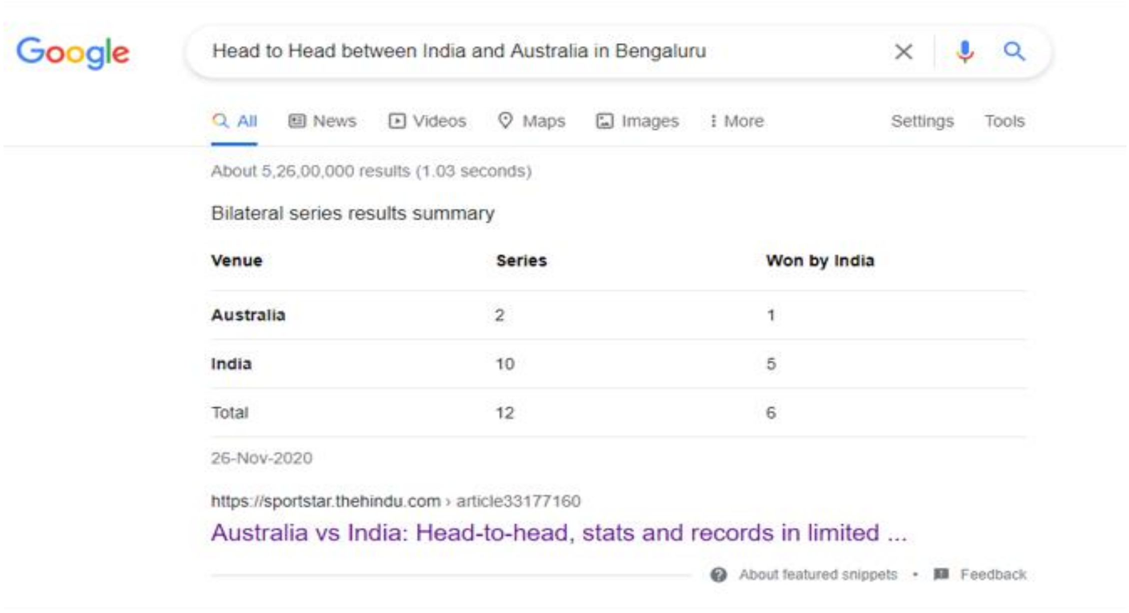
1. Finding the head-to-head stats between two international teams at a particular venue.
   This is the result when the question is asked to the chatbot. Along with the head-to-head stats, the bot even pictorially depicts the stats in a pie-chart manner. It also provides the user with additional highest win by run/wicket stats


[redacted] 9 min
Head to Head between India and Australia in Bengaluru
[redacted] Bot 9 min

Stats between the teams India and Australia in Bengaluru.
Total number of games played: 7
Total number of games won by India :4
Total number of games won by Australia :3
Some other interesting stats are:
Highest margin win by India against Australia:
-Runs: By 60 runs On 3/25/2001 at Bengaluru
-Wickets: By 3 wickets On 10/27/1989 at Bengaluru
Highest margin win by Australia against India:
-Runs: By 61 runs On 11/12/2003 at Bengaluru

Fig 7.16 Head-to-head stats as displayed by the chatbot

Google, on the other hand, doesn't exactly have the right result.



About 5,26,00,000 results (1.03 seconds)

Bilateral series results summary

Venue	Series	Won by India
Australia	2	1
India	10	5
Total	12	6

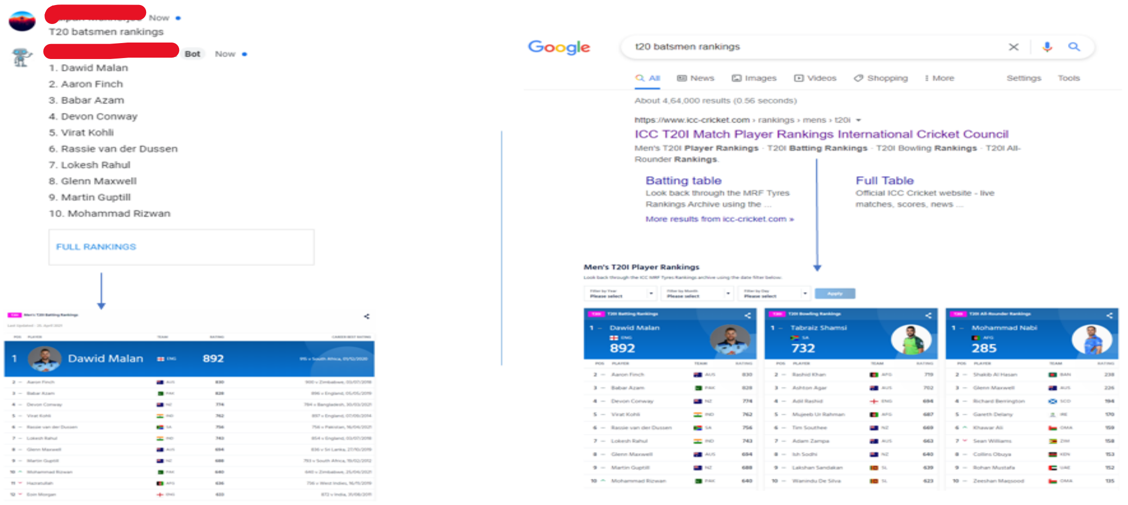
26-Nov-2020

https://sportstar.thehindu.com › article33177160

Australia vs India: Head-to-head, stats and records in limited ...

Fig 7.17 Head-to-head stats as answered by google search

2. To find the current ICC player ranking, it takes at least three-clicks on google to find it. Whereas the chatbot provides the result in a single query, along with a link that would directly take the user to the ICC official page.



[redacted] Now
T20 batsmen rankings

[redacted] Bot Now

1. Dawid Malan
2. Aaron Finch
3. Babar Azam
4. Devon Conway
5. Virat Kohli
6. Rassie van der Dussen
7. Lokesh Rahul
8. Glenn Maxwell
9. Martin Guptill
10. Mohammad Rizwan

About 4,64,000 results (0.56 seconds)

https://www.icc-cricket.com › rankings › mens › t20i

ICC T20I Match Player Rankings International Cricket Council

Men's T20I Player Rankings · T20I Batting Rankings · T20I Bowling Rankings · T20I All-Rounder Rankings.

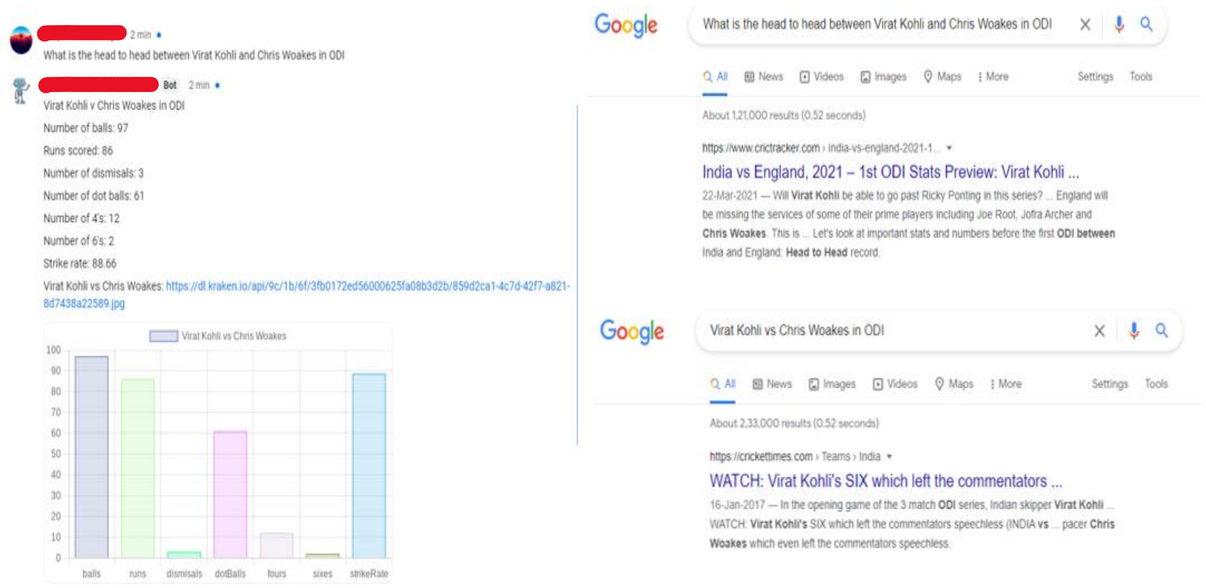
Batting table
Look back through the MRF Tyres Rankings Archive using the ...

Full Table
Official ICC Cricket website - live matches, scores, news ...

More results from icc-cricket.com »

Fig 7.18 Player ranking search comparision

3. Head-to-head stats between players. This information doesn't come along easy. The image in the right shows multiple google searches which provides information irrelevant to the one asked. But, on the left, the bot answers this question with detailed stats and a bar graph for visual depiction.


[redacted] 2 min
What is the head to head between Virat Kohli and Chris Woakes in ODI

[redacted] Bot 2 min
Virat Kohli v Chris Woakes in ODI
Number of balls: 97
Runs scored: 86
Number of dismisals: 3
Number of dot balls: 61
Number of 4's: 12
Number of 6's: 2
Strike rate: 88.66
Virat Kohli vs Chris Woakes: https://dl.kraken.io/api/9c/1b/6f/3fb0172ed56000625fa08b3d2b/859d2ca1-4c7d-42f7-a821-8d7438a22589.jpg

Google: What is the head to head between Virat Kohli and Chris Woakes in ODI

About 1,21,000 results (0.52 seconds)

https://www.crictracker.com › india-vs-england-2021-1...
India vs England, 2021 – 1st ODI Stats Preview: Virat Kohli ...
22-Mar-2021 — Will **Virat Kohli** be able to go past Ricky Ponting in this series? ... England will be missing the services of some of their prime players including Joe Root, Jofra Archer and **Chris Woakes**. This is ... Let's look at important stats and numbers before the first **ODI between** India and England: **Head to Head** record.

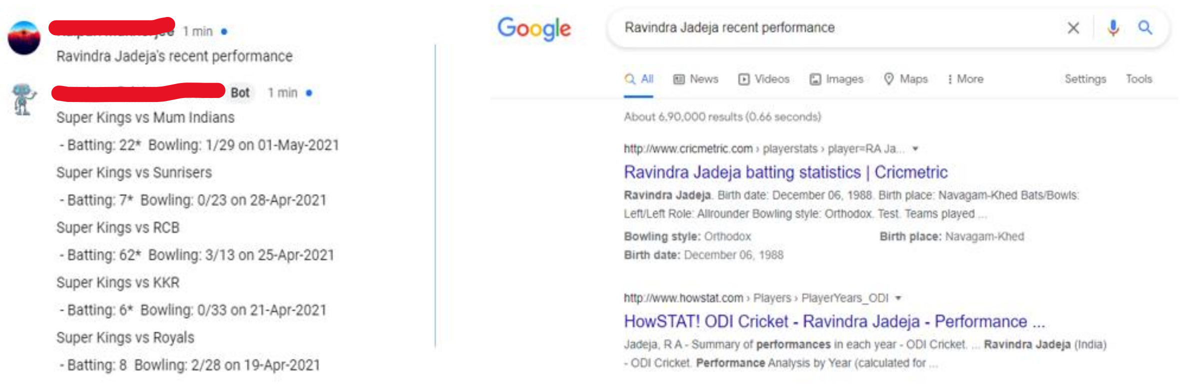
Google: Virat Kohli vs Chris Woakes in ODI

About 2,33,000 results (0.52 seconds)

https://crickettimes.com › Teams › India
WATCH: Virat Kohli's SIX which left the commentators ...
16-Jan-2017 — In the opening game of the 3 match **ODI** series, Indian skipper **Virat Kohli** ... WATCH: **Virat Kohli's** SIX which left the commentators speechless (INDIA **vs** ... pacer **Chris Woakes** which even left the commentators speechless.

Fig 7.19 Comparison of player head-to-head query results

4. Find the latest player performances. It takes a great deal of dedication to get this information using google. A very few websites provide this information in the required manner. But, the websites that do provide this result are barely found in the first page of the google search. This task can be simplified with our chatbot.


[redacted] 1 min
Ravindra Jadeja's recent performance

[redacted] Bot 1 min
Super Kings vs Mum Indians
- Batting: 22* Bowling: 1/29 on 01-May-2021
Super Kings vs Sunrisers
- Batting: 7* Bowling: 0/23 on 28-Apr-2021
Super Kings vs RCB
- Batting: 62* Bowling: 3/13 on 25-Apr-2021
Super Kings vs KKR
- Batting: 6* Bowling: 0/33 on 21-Apr-2021
Super Kings vs Royals
- Batting: 8 Bowling: 2/28 on 19-Apr-2021

Google: Ravindra Jadeja recent performance

About 6,90,000 results (0.66 seconds)

http://www.cricmetric.com › playerstats › player=RA Ja...
Ravindra Jadeja batting statistics | Cricmetric
Ravindra Jadeja. Birth date: December 06, 1988. Birth place: Navagam-Khed Bats/Bowls: Left/Left Role: Allrounder Bowling style: Orthodox. Test. Teams played ...
Bowling style: Orthodox **Birth place:** Navagam-Khed
Birth date: December 06, 1988

http://www.howstat.com › Players › PlayerYears_ODI
HowSTAT! ODI Cricket - Ravindra Jadeja - Performance ...
Jadeja, R A - Summary of **performances** in each year - ODI Cricket. ... **Ravindra Jadeja** (India) - ODI Cricket. **Performance** Analysis by Year (calculated for ...

Fig 7.4 Comparison of player recent performance search queries

CHAPTER 8

CONCLUSION AND FUTURE WORK

Our application is one of the most unique cricket chatbot that is built. It acts as a single point source to query all types of cricketing questions. By fetching data from almost all sources available, this application has the capability to act in a very efficient manner to get your cricketing question answered. Certain information that would require the prior knowledge of the user to know where to look can be eliminated with this chatbot. Multiple clicks on google can be cut down to one click here. Using dialogflow reduces the burden of creating an NLP model of our own. But we know that with every pro, there is a con. One of the issues with using dialogflow is that the request should be fulfilled within the timeout window (5 seconds).

One of the major challenges that we face while building this kind of chatbots is the need to regularly update the data. The databases that are used must be fed with new data at regular intervals of time. This is crucial to having a real-world application.

To make the cricket chatbot more fun, we can add a few games into the service. Games may include quiz, hand-cricket etc. Adding small-talks, legendary quotes, fun facts and live commentary may take the chatbot to the next level. The chatbot must be trained to respond to wide range of queries including the ones that it isn’t trained to respond to. Integrating an AI model would serve this purpose.

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[5] SportsMonk, https://www.sportmonks.com/

[6] NewsAPI, https://newsapi.org/s/india-sports-news-api

[7] ESPN Cric Info, https://www.espncricinfo.com/