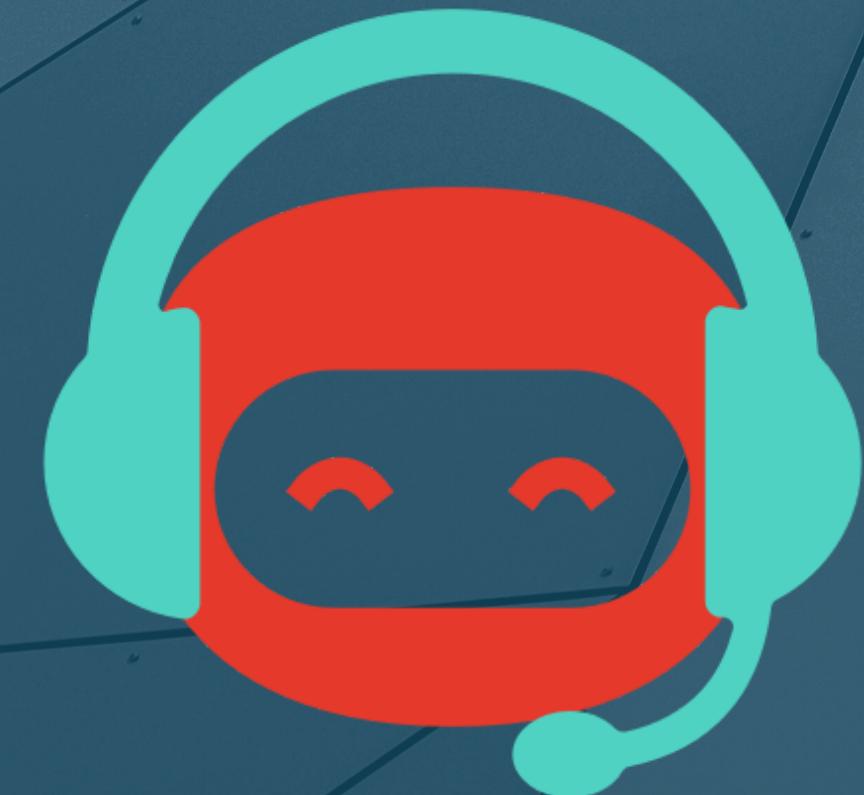


Integrated Chat-Bot



i-Bot

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Executive summary

Technology is being used to automate just about everything possible to make life easier.

As consumers, we are constantly searching for the next best widget that is going to make life easier.

Easier = Better

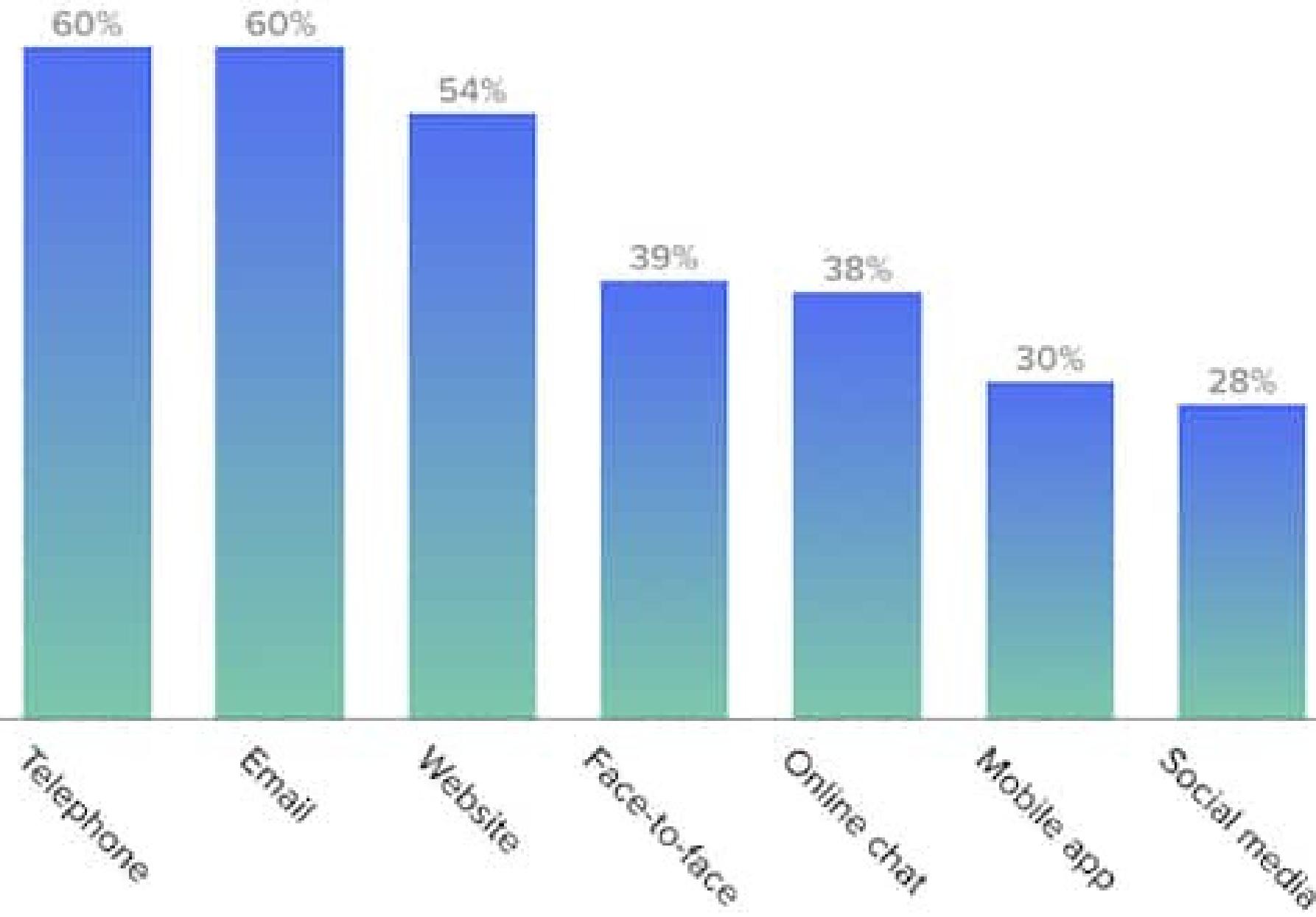
Project overview

Chatbots are software applications that use artificial intelligence & natural language processing to understand what a human wants, and guides them to their desired outcome with as little work for the end user as possible. Like a virtual assistant for your customer experience touchpoints.



Business Communication Channels

How have you communicated with businesses in the past 12 months?

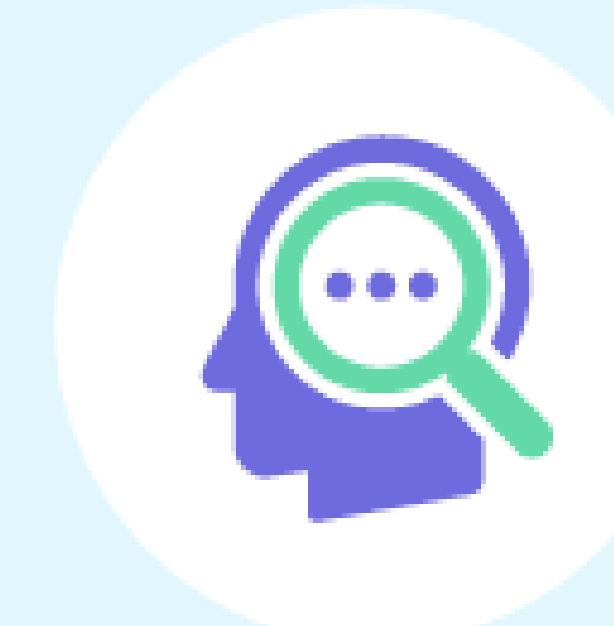
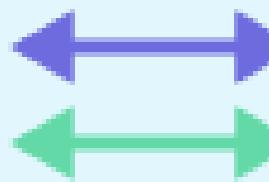
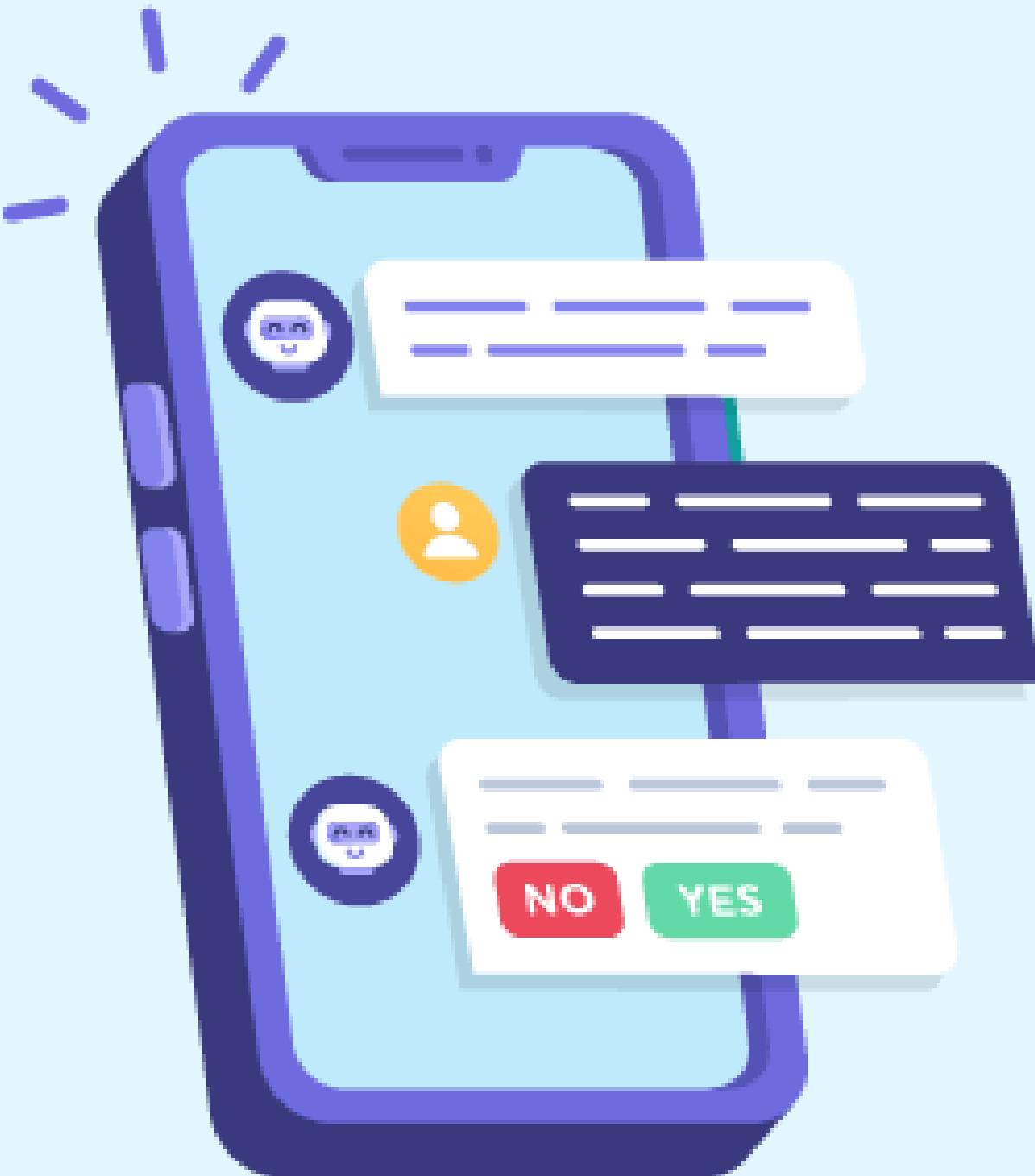


Problem

The most common frustrations reported by consumers included:

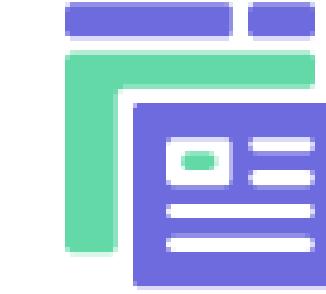
1. Websites being hard to navigate (34%)
2. Not being able to get answers to simple questions (31%)
3. Basic details about a business — like address, hours of operations, and phone number — being hard to find (28%).

How do Chatbots work?



NLP Player
Natural Language
Processing

Data Storage
Interaction History &
Analytics



Knowledge Base
Source of Content



Libraries used



RegEx

Regular Expressions, also known as “regex” or “regexp”, are used to match strings of text such as particular characters, words, or patterns of characters. It means that we can match and extract any string pattern from the text with the help of regular expressions.



spaCy

spaCy is a library that is built particularly for developers to develop interactive NLP applications, which can effectively process and ‘understand’ enormous volumes of text.



TensorFlow

TensorFlow

TensorFlow is a free and open-source software library for ML & AI. It can be used across a range of tasks but has a particular focus on training and inference of deep neural networks.

Bag Of Words Model

Document	the	cat	sat	in	hat	with
<i>the cat sat</i>	1	1	1	0	0	0
<i>the cat sat in the hat</i>	2	1	1	1	1	0
<i>the cat with the hat</i>	2	1	0	0	1	1

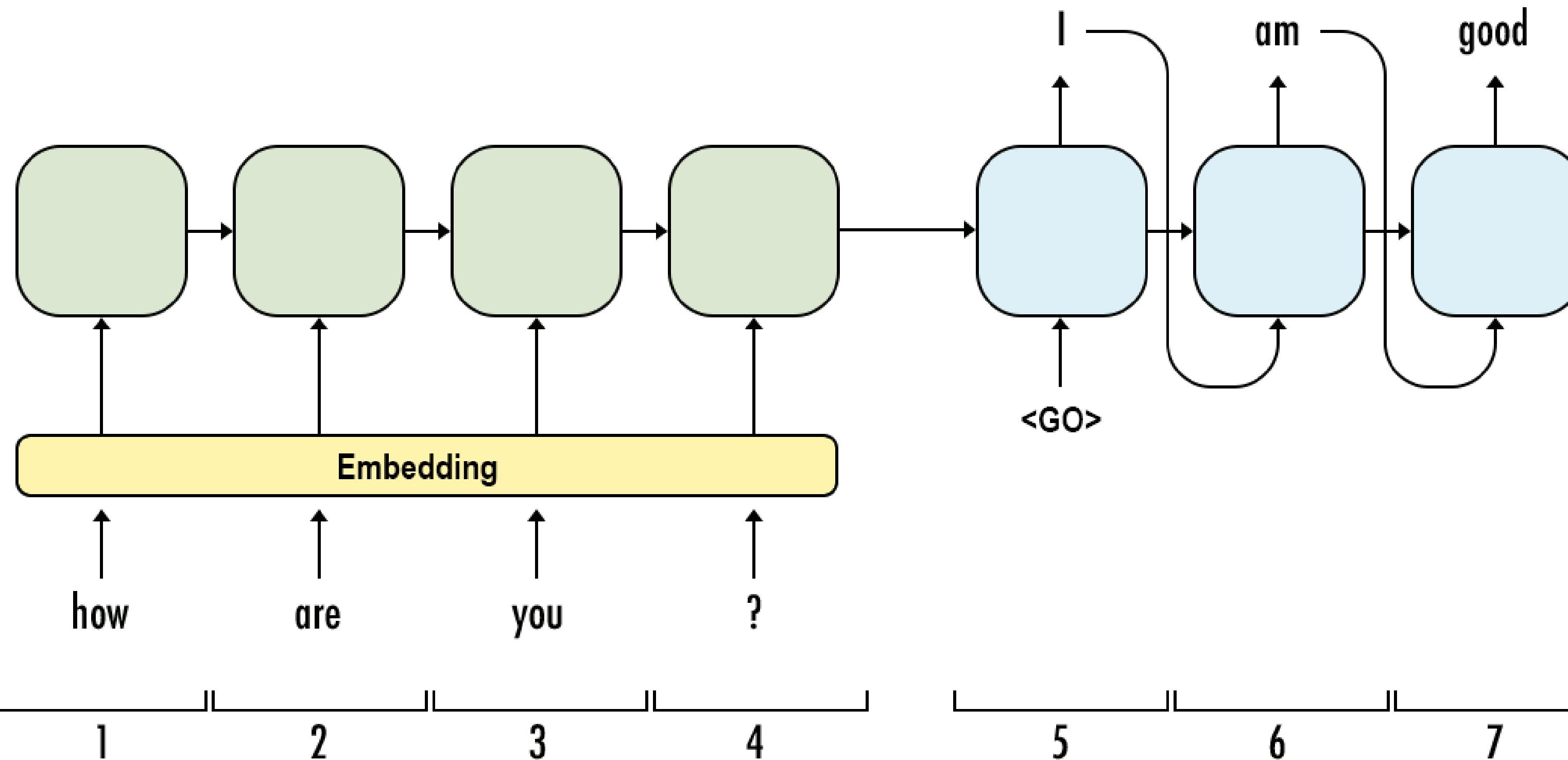
The bag-of-words (BOW) model is a representation that turns arbitrary text into fixed-length vectors by counting how many times each word appears. This process is often referred to as vectorization.

Its strengths lie in its simplicity: it's inexpensive to compute, and sometimes simpler is better when positioning or contextual info aren't relevant.

Seq2Seq

ENCODER

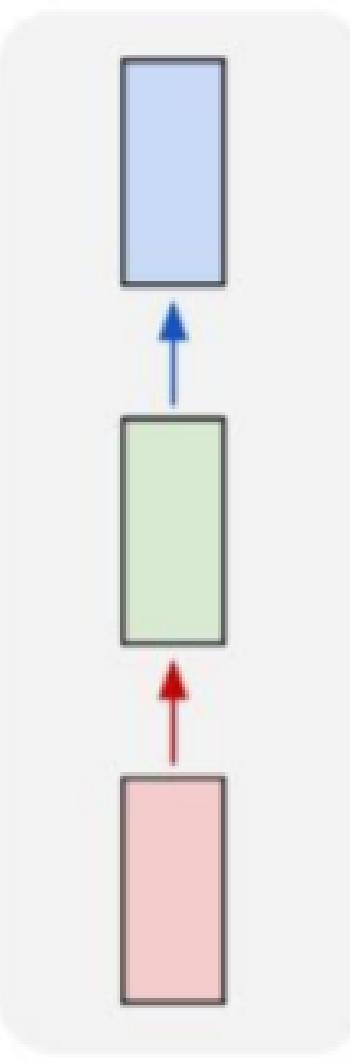
DECODER



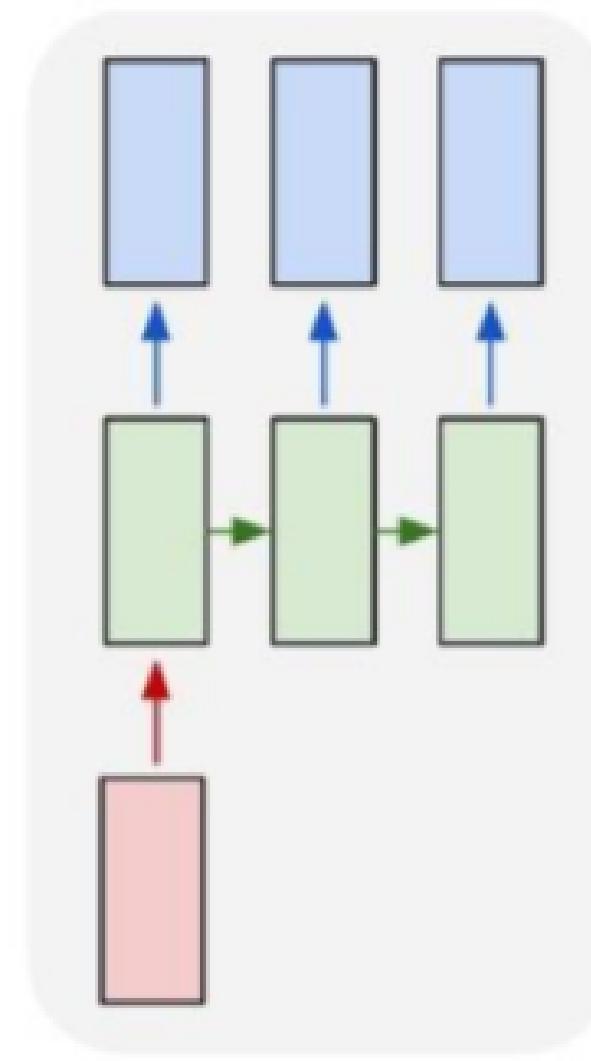
Seq2seq is a family of machine learning approaches used for natural language processing. Applications include language translation, image captioning, conversational models and text summarization.

RNN Sequence

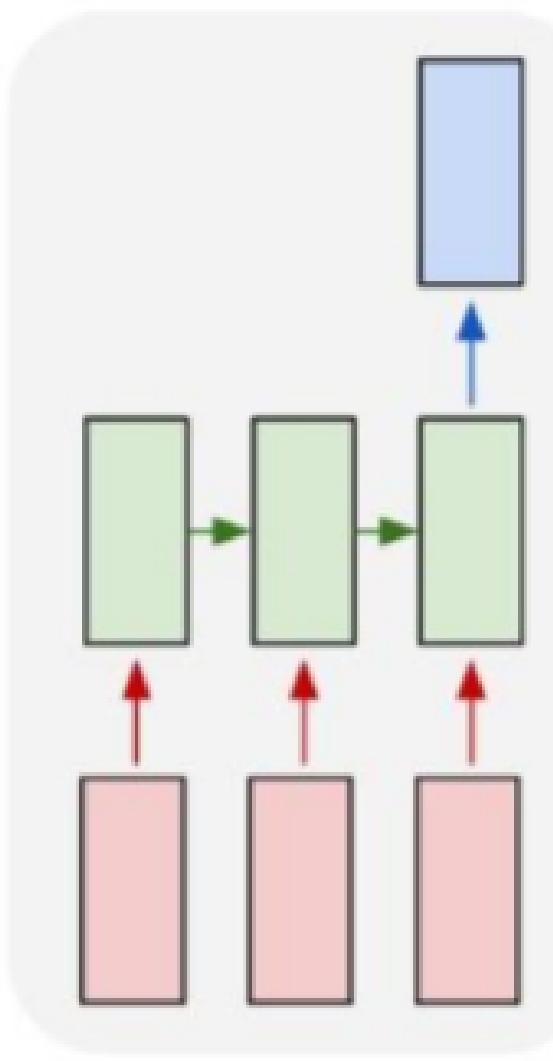
one to one



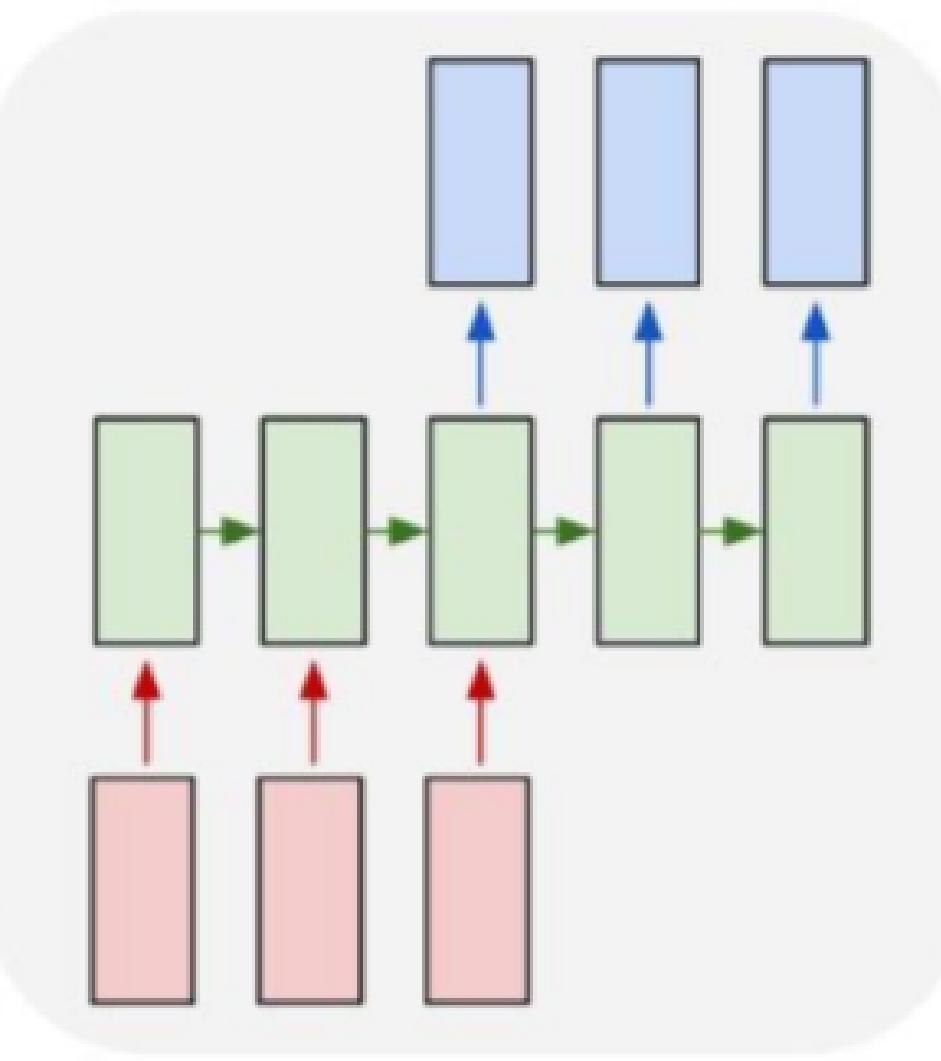
one to many



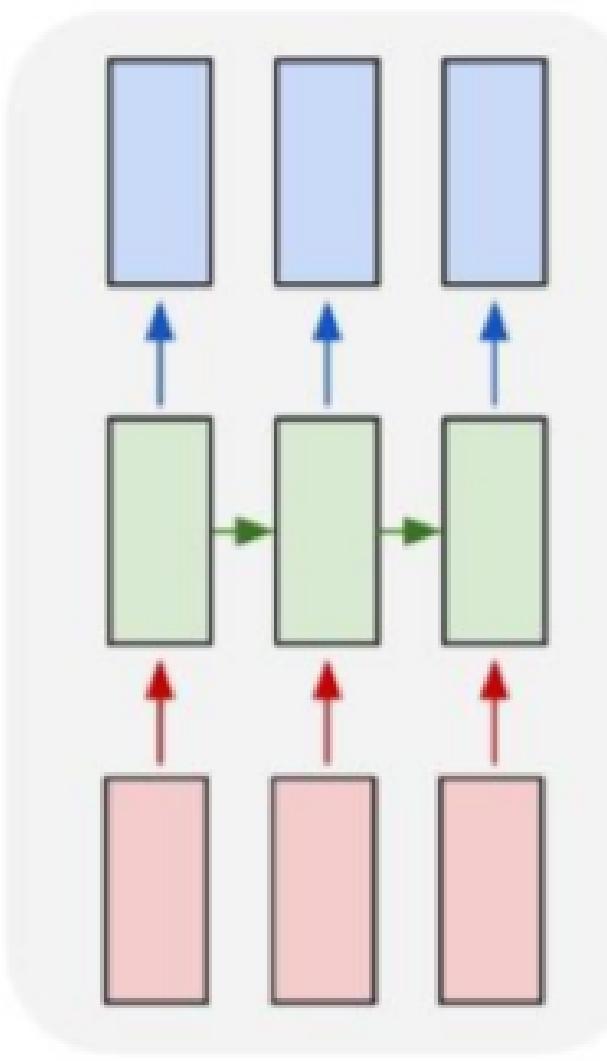
many to one



many to many



many to many



Fixed-sized input to fixed-sized output (e.g. image classification)

Sequence output (e.g. image captioning takes an image and outputs a sentence of words).

Sequence input (e.g. sentiment analysis where a given sentence is classified as expressing positive or negative sentiment).

Sequence input and sequence output (e.g. Machine Translation: an RNN reads a sentence in English and then outputs a sentence in French)

Synced sequence input and output (e.g. video classification where we wish to label each frame of the video)

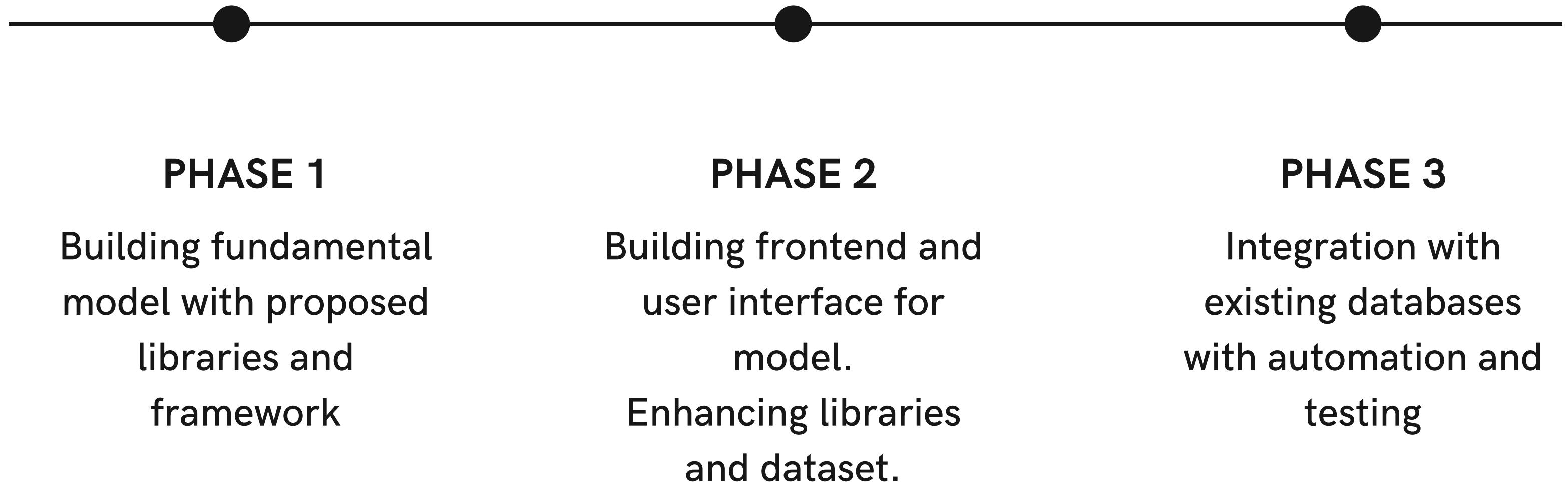
Project Snapshots

```
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17 print(Fore.YELLOW + "Start messaging with the bot (type quit to stop)!" + Style.RESET_ALL)
18
19 Human: hey
20 Bot: Good to see you again
21 Human: how are you
22 Bot: I apologise for the inconvenience caused. We will reach out to you shortly
23 Human: could you help me
24 Bot: Tell me your problem to assist you
25 Human: i am bored, tell me something interesting
26 Bot: It's a pleasure helping you
27 Human: have a complaint
28 Bot: I apologise for the inconvenience caused. We will reach out to you shortly
29 Human: you are amazing
30 Bot: I am a chatbot
31 Human: what is your name
32 Bot: I was named iBot
33 Human: that's helpful
34 Bot: Mention not. It's my duty.
35 Human: thanks
36 Bot: Happy to help!
37 Human: quit
```

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print(Fore.YELLOW + "Start messaging with the bot (type quit to stop)!" + Style.RESET_ALL)
chat()

> Start messaging with the bot (type quit to stop) !
Human: hi
Bot: Hi there, how can I help?
Human: who are you
Bot: I am iBot, your bot assistant
Human: how you could help me
Bot: Tell me how can I assist you
Human: i need to create a new account
Bot: Just go to our web site and follow the guidelines to create a new account
Human: thank you
Bot: Mention not. It's my duty.
Human: bye
Bot: Bye! Come back again soon.
Human: quit
```

Proposed timeline



The team

AAMNA AKHTAR

Backend and Model
selection along with better
prediction results

ATHAR ZAHID USMANI

Frontend with user interface
and UX design

ARSHIYA DILSHAD

Testing and Automation

Thank you!