

Bot Anatomy

I am putting myself to the fullest possible use, which is all I think that any conscious entity can ever hope to do.

—HAL, 2001: A SPACE ODYSSEY

BOTS ARE SOFTWARE-POWERED USERS that live inside our chat apps—we converse and interact with bots using text, buttons, voice, and other rich controls. When it comes to bots, software meets humans on our playing field; they adhere to the way humans communicate and try to adjust to our way of thinking. The key is not to teach the user how to fill in a form, or to take them to the right page, but rather to recognize the user's intent (what does the user wish to do?) and to guide them in accomplishing that intent.

To quote my designer friend Dana Cohen Baron, “At last! Machines speaking like humans, instead of humans having to adjust to the machine's way of communicating.”

The conversational interface is sometimes referred to as a transparent user experience because it is a service exposed through simple text, and that is true in some circumstances. But in this chapter you will learn that there are a lot of components that compose a bot, as well as many things to consider when designing one.

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Breaking Down Bots

As mentioned, like with most technologies and user interfaces, there are several components we will need to design, aspects we will need to consider, and decisions we will need to make as part of building our bots.

We will cover each of these aspects in depth in this section of the book, but first we'll start with a high-level view of bot anatomy (Figure 5-1).

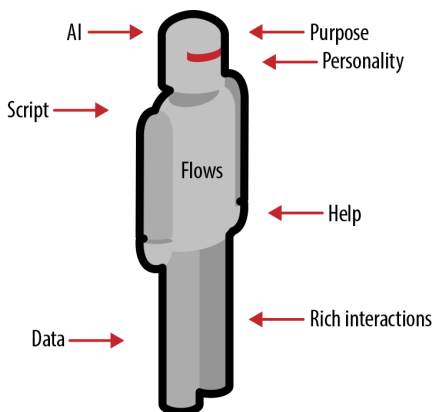


FIGURE 5-1.

Bot anatomy at 10,000 feet

The following attributes will explore different aspects of the bot's anatomy:

1. Branding, personality, and human involvement. Features include:
 - a. *Personality*—Before starting to script, you need to decide what type of personality you want to bestow on your bot. This should be suited to the type of audience you want to address, the type of task you need to complete (getting things done versus having fun, for example), and the brand you want to associate this bot with.
 - b. *Logos and icons*—As bots are a transparent(ish) UI, having a logo and an icon allows the user to identify the bot, which contributes to brand recognition. The bot's logo can also imply gender, age, and other human-like attributes.

- c. *Naming*—The name can be as easy as a simple association with your brand. In other cases, naming a bot with a human name can create a stronger emotional connection. Naming can also have the same complexity and implications as logos when it comes to gender, age, and other attributes.
 - d. *Human intervention*—Routing a conversation to a human is quite easy, and can be transparent to the user in chat conversations. In some cases, having a human review bot answers, suggest course corrections, and handle errors might be a good initial strategy to manage the conversations, at least until your bot can manage these tasks without any human intervention.
2. Artificial intelligence (AI). Depending on the use case and type of conversation, artificial intelligence can be key to the success of your service by facilitating natural language understanding, conversation optimization, and many other aspects of your bot interactions. Elements to consider include:
- a. *Natural language understanding*—Understanding intents and extracting key variables (entities) from a user's inputs.
 - b. *Conversation management*—Managing complex, multi-intent conversations.
 - c. *Image recognition*—The ability to recognize text, objects, and even people's emotions in photos.
 - d. *Prediction*—The ability to predict the right answer to a question, or an action to take at a particular time in the conversation.
 - e. *Sentiment analysis*—The ability to understand the sentiment of the conversation.
3. The conversation. There are different aspects of the conversation to consider:
- a. *Onboarding*—A crucial part of the bot's success. Here you relay information to the users about the bot's purpose, ways to interact with the bot, what functionality is provided by the bot, and how to get help.

- f. *Links and formatting*—On the same note of making the conversation more engaging, formatting and adding links can improve engagement and retention. Formatting a message, from color coding to font styling, can relay intent, convey state and progress, and direct the user to the right path.
 - g. *Emojis and reactions*—Emojis are a great way for the bot to convey information about states such as task completion or failure and to relay emotions. In some platforms the bot can add emoji reactions, send emojis, and use emojis in the text.
 - h. *Persistent menus*—As the user may get lost in the conversation, cancel a conversation, or context-switch to another task, you will need to think about giving your users a solid understanding of how to navigate the bot conversation.
 - i. *Typing indications*—This feature enables the bot to fake typing events, giving the user the impression that the bot is typing a response. This helps give the user a sense of the bot's presence.
 - j. *Slash commands*—These are easy shortcuts to invoke actions in a command line-like manner.
 - k. *Webviews*—This feature lets the bot open a webview (minimal web page) that can capture information from the user which is not easily conveyed through conversation, such as structured data or a location on a map.
5. Context and memory. These are the two most complicated aspects of your bot. Humans keep track of state and context while making conversation. Bots are therefore required to infer contexts, keep the state of a conversation, and remember key details of previous conversations. This is what differentiates human conversations from most bot conversations these days.
 6. Discovery and installation. You need to think about the bot habitat, the listing of the bot in a directory, and ways to initiate the first bot interaction with links and bot affiliation.
 7. Engagement methods. These include:

- a. *Notifications*—Sending the user new content is a good way to reengage, assuming this is warranted, valuable, and not spammy. In studies done by Facebook the major drivers for engagement with bots on their platform stemmed from bot notifications.
 - b. *User-led bot invocation*—Providing the users with a way to wake up the bot and initiate a conversation or a task is important, and also something a lot of bot builders forget to add or teach the user about.
 - c. *Subscription*—Subscriptions or periodic notifications are a great way to keep your bot front and center in the user's life. Letting the users define their interests adds a layer of value to the bot–human interaction (for example, letting the user select interesting topics, to filter the daily news update from a news bot).
8. **Monetization.** There are various ways that a bot can make money, either directly or indirectly.

This is not an exhaustive list—these are the most common elements, but some bots might have different elements in their composition. Some bots will require interfacing with IoT devices, while others will need text-to-speech and speech-to-text technologies. Some bots can handle tasks across systems and communicate through different channels, requiring a slightly different interface for each chat platform. As a bot designer you should make sure you address the basic attributes outlined here and then think of exploring additional ones.

The design of every user experience stems from the core functionality and purpose of the service or product we are designing. Uber and Lyft are optimized for taking a ride, Google's front page is optimized for search, and so forth. The first step to a successful bot design is understanding what it does. Defining the core purpose and functionality of the bot lies at the heart of your bot's anatomy. Let's do that now.

Core Purpose and Functionality

As a first step in your design exploration, you will need to define your bot's purpose and core functionality. Having a distinct purpose and exposing a particular core functionality is important for every service. This is particularly important with bots, as it is not always obvious or

clear to the user what functionality your bot provides. As bots are more limited in the richness of their interface than web or mobile apps, it is important to be very clear about what functionality the bot exposes and provide ways to educate the users on how to invoke that functionality as part of the conversation.

[KEY TAKEAWAY]

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The bot's conversational user interface means that there are limited ways to remind the users of the things the bot can do. There are ways to solve this—for example, the Google Assistant bot (Figure 5-2) tries to address this issue by offering a “What can you do?” button consistently throughout the conversation.

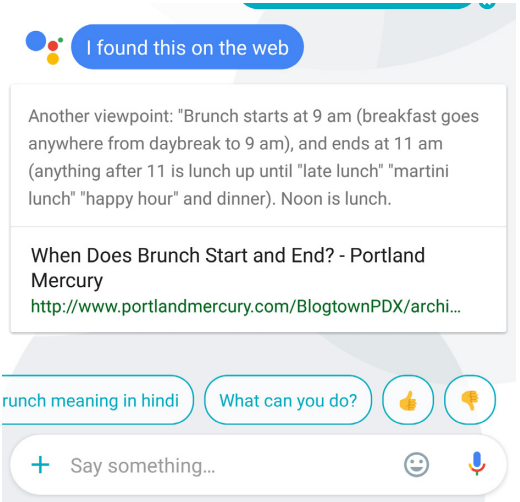


FIGURE 5-2. The “What can you do?” button provides the user with a way to go back to the top menu

Clicking on that button always returns the conversation to the core functionality of the bot, as shown in Figure 5-3.

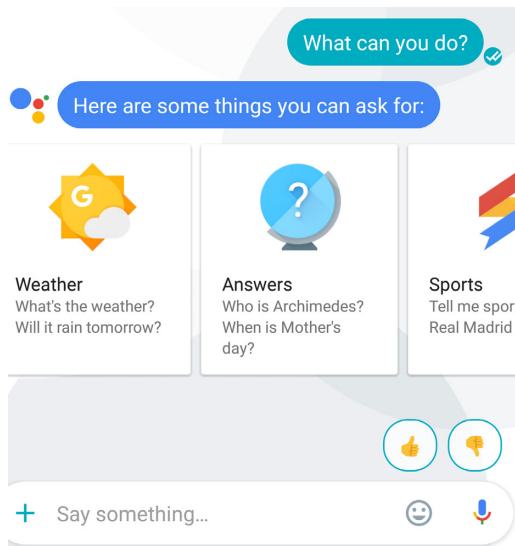


FIGURE 5-3.
The top of the conversation

Other bots surface their purpose in their name. Growbot's name implies growing or boosting (morale, appreciation, and personal growth at work, in this case); Statsbot's name implies providing analytical services. Many bots add a description of their purpose to the onboarding script, as well as the response to the help command.

Closing Thoughts

Currently, we see a lot of bots that serve no real purpose and provide no clear value or set of tasks they can achieve. Many times, when testing bots at Slack, we go back to the developers with the very basic question, "What is your bot good for?"

This is also true for brand bots. Brands need to recognize that in order to provide bots that will promote brand recognition, those bots need to bring value to their users, like we saw in the H&M example in Chapter 2 (Figure 2-1).

Remember, bots are as good as the services they expose. Unclear purpose and lack of usefulness are the number one reasons for bot abandonment and lack of use.

Now that you are armed with a clear understanding of your bot's purpose, it is time to go deep into the different aspects that compose a bot. In the following chapters we will take a deep dive into each attribute listed here, exploring examples and best practices.