A chatbot (also known as a talkbot, chatterbot, Bot, IM bot, interactive agent, or Artificial Conversational Entity) is a co
ts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how a
e Turing test. Chatbots are typically used in dialog systems for various practical purposes including customer service
natural language processing systems, but many simpler systems scan for keywords within the input, then pull a repl
tern, from a database.

The term "ChatterBot" was originally coined by Michael Mauldin (creator of the first Verbot, Julia) in 1994 to describe
accessed via virtual assistants such as Google Assistant and Amazon Alexa, via messaging apps such as Facebook M
es. Chatbots can be classified into usage categories such as conversational commerce (e-commerce via chat), analyti
ation, entertainment, finance, food, games, health, HR, marketing, news, personal, productivity, shopping, social, spo
Background
In 1950, Alan Turing's famous article "Computing Machinery and Intelligence" was published, which proposed what is
iterion depends on the ability of a computer program to impersonate a human in a real-time written conversation w
tinguish reliablyon the basis of the conversational content alonebetween the program and a real human. The notorio
izenbaum's program ELIZA, published in 1966, which seemed to be able to fool users into believing that they were co
im that ELIZA was genuinely intelligent, and the Introduction to his paper presented it more as a debunking exercise

[In] artificial intelligence ... machines are made to behave in wondrous ways, often sufficient to dazzle even the most
ed, once its inner workings are explained ... its magic crumbles away; it stands revealed as a mere collection of proce
hat". With that thought he moves the program in question from the shelf marked "intelligent", to that reserved for cu
luation of the program about to be "explained". Few programs ever needed it more.

ELIZA's key method of operation (copied by chatbot designers ever since) involves the recognition of cue words or ph
or pre-programmed responses that can move the conversation forward in an apparently meaningful way (e.g. by res
E ABOUT YOUR FAMILY').Thus an illusion of understanding is generated, even though the processing involved has be
ngly easy to generate, because human judges are so ready to give the benefit of the doubt when conversational resp

Interface designers have come to appreciate that humans' readiness to interpret computer output as genuinely conv
tchingcan be exploited for useful purposes. Most people prefer to engage with programs that are human-like, and th
ractive systems that need to elicit information from users, as long as that information is relatively straightforward an
e help systems can usefully employ chatbot techniques to identify the area of help that users require, potentially pro
nu system. This sort of usage holds the prospect of moving chatbot technology from Weizenbaum's "shelf ... reserve
s".

Development
The classic historic early chatbots are ELIZA (1966) and PARRY (1972).More recent notable programs include A.L.I.C.E
CNRS 2006). While ELIZA and PARRY were used exclusively to simulate typed conversation, many chatbots now inclu
984, a book called The Policeman's Beard is Half Constructed was published, allegedly written by the chatbot Racter
ing so).

One pertinent field of AI research is natural language processing. Usually, weak AI fields employ specialized software
unction required. For example, A.L.I.C.E. uses a markup language called AIML, which is specific to its function as a co
r developers of, so called, Alicebots. Nevertheless, A.L.I.C.E. is still purely based on pattern matching techniques with
using back in 1966. This is not strong AI, which would require sapience and logical reasoning abilities.

Jabberwacky learns new responses and context based on real-time user interactions, rather than being driven from a
learning with evolutionary algorithms that optimise their ability to communicate based on each conversation held. S
ial intelligence, and some software developers focus on the practical aspect, information retrieval.

Chatbot competitions focus on the Turing test or more specific goals. Two such annual contests are the Loebner Priz
still be found from web archives).

According to Forrester (2015), AI will replace 16 percent of American jobs by the end of the decade.Chatbots have be
ct education. However, a study conducted by Narrative Science in 2015 found that 80 percent of their respondents b
eded]

Application
See also: Virtual assistant

Aeromexico airline chatbot running on Facebook Messenger, March 2018

Messaging apps
Many companies' chatbots run on messaging apps like Facebook Messenger (since 2016), WeChat (since 2013),What
used for B2C customer service, sales and marketing.

In 2016, Facebook Messenger allowed developers to place chatbots on their platform. There were 30,000 bots create
ber 2017.

Since September 2017, this has also been as part of a pilot program on WhatsApp. Airlines KLM and Aeromxico both
ously launched customer services on the Facebook Messenger platform.

The bots usually appear as one of the user's contacts, but can sometimes act as participants in a group chat.

Many banks and insurers, media and e-commerce companies, airlines and hotel chains, retailers, health care provide
answer simple questions, increase customer engagement,for promotion, and to offer additional ways to order from

A 2017 study showed 4% of companies used chatbots.According to a 2016 study, 80% of businesses said they intend

As part of company apps and websites
Previous generations of chatbots were present on company websites, e.g. Ask Jenn from Alaska Airlines which debut
d in 2011.The newer generation of chatbots includes IBM Watson-powered "Rocky", introduced in February 2017 by
mation to prospective diamond buyers.

Company internal platforms
Other companies explore ways they can use chatbots internally, for example for Customer Support, Human Resourc
e, has reportedly launched a chatbot named Mila to automate certain simple yet time-consuming processes when re
Group, Royal Bank of Scotland, Renault and Citron are now using automated online assistants instead of call centres
business ecosystem has been steadily growing since the F8 Conference when Zuckerberg unveiled that Messenger w

Toys
Chatbots have also been incorporated into devices not primarily meant for computing such as toys.

Hello Barbie is an Internet-connected version of the doll that uses a chatbot provided by the company ToyTalk,which
cters for children.These characters' behaviors are constrained by a set of rules that in effect emulate a particular cha

IBM's Watson computer has been used as the basis for chatbot-based educational toys for companies such as Cogni

Chatbot creation
The process of creating a chatbot follows a pattern similar to the development of a web page or a mobile app. It can

Design
The chatbot design is the process that defines the interaction between the user and the chatbot.The chatbot designe
asked to the users, and the overall interaction.It can be viewed as a subset of the conversational design. In order to s
ign tools, that allow for immediate preview, team collaboration and video export.An important part of the chatbot de
rformed following the same principles that guide the user testing of graphical interfaces.

Building
The process of building a chatbot can be divided into two main tasks: understanding the user's intent and producing
r input. In order to properly understand a user input in a free text form, a Natural Language Processing Engine can b
g on the type of the response that the chatbot will generate.

Analytics
The usage of the chatbot can be monitored in order to spot potential flaws or problems. It can also provide useful in

Maintenance
To keep chatbots up to speed with changing company products and services, traditional chatbot development platfo
ongoing service provider or for larger enterprises in the form of an in-house chatbot training team.To eliminate thes
igence to develop self-learning chatbots, particularly in Customer Service applications.

Chatbot development platforms
The process of building, testing and deploying chatbots can be done on cloud based chatbot development platforms

liva, Oracle Cloud Platform, SnatchBot and IBM Watson.These cloud platforms provide Natural Language Processing
development.

APIs
There are many APIs available for building your own chatbots, such as AARC.

Malicious use
Malicious chatbots are frequently used to fill chat rooms with spam and advertisements, by mimicking human behav
formation, such as bank account numbers. They are commonly found on Yahoo! Messenger, Windows Live Messeng
also been a published report of a chatbot used in a fake personal ad on a dating service's website.