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| ***Techniques for Documenting with Proof or Supporting Evidence, and Related Strategies for Problem Solving***  **By David Alderoty © 2016**  **Chapter 12) Can a Computer have Common Sense,**  **And Computer Simulations of Common Sense,**  **With Artificial Intelligence Software**  [**This e-book presents 28 techniques for supporting the validity of the statements you write**](http://www.TechForText.com/DP/List)**.**  **Left click on the above for a list of the techniques**  **This chapter contains a little over 4,950 words**  **If you want to go to chapter 11, left click on the following link:**  [**www.TechForText.com/DP/chapter-11**](http://www.TechForText.com/DP/chapter-11)  **To contact the author use David@TechForText.com**  [**or left click for a website communication form**](http://www.david100.com/Mail)  **Table of Contents, and an Outline of this Chapter**  The following is a hyperlink table of contents, as well as an outline of this chapter. If you left click on a blue underlined heading, the corresponding topic or subtopic will appear on your computer screen. Alternatively, you can scroll down to access the material listed in the table of contents, because this chapter is on one long webpage.  [Topic 1.) Can a Computer have Common Sense? 4](#_Toc467802627)  [**Subtopic, Can a Computer Have Common Sense That Functions Similar to Human Common Sense?** 5](#_Toc467802628)  [**Subtopic, A Brief Description of What Computers And Software can Do, and Cannot Do** 8](#_Toc467802629)  [Topic 2.) With Specialized Software, Computers Can MIMIC Certain Aspects of Common Sense, with Varying Degrees of Effectiveness 10](#_Toc467802630)  [**Subtopic, Computers can Read Text Aloud, with Text-To-Speech Software** 10](#_Toc467802631)  [**Subtopic, The Practical Utility of Text‑To‑Speech Software, for the Writer** 12](#_Toc467802632)  [**For Additional and Supporting Information and to download Text-To-Speech Software, see the Following Websites** 12](#_Toc467802633)  [**For Additional and Supporting Information on Text‑To‑Speech Software, see the Following Web-Based Videos** 14](#_Toc467802634)  [**Subtopic, Speech to Text Software, Transcribes Human Speech into Text, and Carries Out Spoken Commands** 14](#_Toc467802635)  [**For Additional and Supporting Information and for Speech to Text Software, see the Following Websites** 17](#_Toc467802636)  [**For Additional and Supporting Information on Speech to Text Software, see the Following Web-Based Videos** 18](#_Toc467802637)  [Topic 3.) Artificial Intelligence, Consisting of Computerized Chat Robots, and Personal Assistants Software that Simulate Common Cense 19](#_Toc467802638)  [**Subtopic, Structural and Technical Similarities Between Speech to Text Software, Chatbots, and Personal Assistants Software** 21](#_Toc467802639)  [**Subtopic, Chatbots, and Personal Assistant Software, May be programmed with Personality and Gender** 23](#_Toc467802640)  [**Subtopic, Interviewing Chatbots, and Personal Assistants Software Devices, that Simulate Commonsense** 23](#_Toc467802641)  [**Subtopic, Interview with Mary, Personal Assistant Chatbot** 24](#_Toc467802642)  [**Subtopic, Interview with Mitsuku, Online Chatbot** 26](#_Toc467802643)  [**Subtopic, Interview with Alice, Online Chatbot** 30](#_Toc467802644)  [**Web-Based Articles for Additional and Supporting Information, and for Software, that Relates to this Chapter** 32](#_Toc467802645)  [**Web-Based Videos for Additional and Supporting Information for the Material Presented in this Topic** 36](#_Toc467802646)  **This E-Book Provides Additional and Supporting Information from other Authors, with Web Links**  This e-book contains links to web-based articles and videos from other authors, for **additional, alternative, and supporting information.** The links are the blue underlined words, presented throughout this e-book. However, some of these links are to access different sections of this e-book, or material on my own websites.  Quotes and paraphrases in this e-book have hyperlinks to access the original source. The quotes are presented in brown text, which is the same color of these words. (The precise text color is RGB Decimal 165, 42, 42, or Hex #a52a2a)  Some of the web links in this e-book will probably fail eventually, because websites may be removed from the web, or placed on a new URL. If a link fails, use the blue underlined words as a search phrase, with [www.Google.com](http://www.google.com/) If the link is for a video, use [www.google.com/videohp](http://www.google.com/videohp) The search will usually bring up the original website, or one or more good alternatives. |

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| ***For those who prefer listening, as an alternative to reading, this book is recorded in an audio format.***  [***For an audio narration of topic 1, left click on these words (requires 6 minutes, and 59 seconds).***](P1.mp3)  [***For an audio narration of topic 2, left click on these words (requires 12 minutes, and 8 seconds).***](P2.mp3)  [***For an audio narration of topic 3, left click on these words (requires 21 minutes, and 56 seconds).***](P3.mp3) |

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| **Topic 1.) Can a Computer have Common Sense?**  |||  **The material in this chapter is based on my knowledge of computer and software developments up until November 2016.** Developments in computer technology are taking place at a very rapid rate. Thus, there may have been new developments in computer technology that I was not aware of when I wrote this chapter.  This chapter will be focused on the following:   * Can a computer have common sense that functions similar to human common sense? * Can computers mimic some components of common sense, such as by reading and writing text? * Are there any developments in artificial intelligence that might be useful to the writer? * Are there computers and software that can simulate common sense, such as by answering random interview questions, or responding to verbal questions that involve mathematics? If not, would it ever be possible to develop computers and software that can carry out the above?   **Subtopic, Can a Computer Have Common Sense That Functions Similar to Human Common Sense?**  |||  Can a computer have common sense the way people do? Computers are **not** consciously aware of images and other data that is entered into their memory. More precisely, they cannot evaluate information in the same way that human beings can. Humans essentially perceive and evaluate the world on a multidimensional level. As a result, they can develop a large number of reasonably accurate assumptions or conclusions about an entity, from a single experience. For example, if an adult did not know what an elephant was, when he sees an elephant for the **first time**, he will most likely derived the following conclusions:   * Elephants are animals, and they are larger and heavier than people and other animals * Elephants have a tale, and they walk on four legs * Elephants are different from other animals, because they have a trunk, which they used to manipulate food and objects. * Because of their large size, elephants are stronger than people and other animals, and they could be dangerous.   Computers cannot derive a set of conclusions by observing a random object, as described above. With the above set of conclusions a human can answer an almost limitless number of questions about elephants, such as the following:   * Could a human being possibly ride on the back of an elephant? * If there were a fight to the death, between an elephant and a rabbit, which animal would most likely win? * Can a man lift an elephant with his hands? * How many limbs does an elephant have? * If you bought an elephant, would it cost more than a rabbit? * Would an elephant cost more than the world’s largest zoo? * Could you fit an elephant in a cage designed for a rabbit? * Could you fit an elephant in the Grand Canyon?   A computer could answer the above questions **ONLY IF** the answers were programmed into the software. A more complex possibility is to incorporate visual recognition software that can recognize specific components that relate to elephants, and to compare them with other animals. This is certainly **not** the same as human common sense, as described in the previous paragraph. With the common sense faculty, a human can figure out the answers to a large number of random questions about an entity. This can include questions that compare the entity to other objects and animals.  **Subtopic, A Brief Description of What Computers And Software can Do, and Cannot Do**  |||  **It should be apparent from the above computers do not have the ability to carry out common sense reasoning, the WAY HUMAN BEINGS DO.** Computers can answer questions based on programming, such as **if the input is question-A, search database to find and display answer‑A.** This might also include, **if answer-A is not in the database, search for** ***closest matching answer to question-A****.*  However, if the computer is instructed to choose the closest *matching answer to question-A,* it might display an erroneous answer.This situation arises when *speech to text software* provides an incorrect phrase, which does not relate to the statement the user verbalized. A similar situation is seen with artificial intelligence software, such as chat robots. This can involve a meaningless response, to a question or statement presented by the user.Most of us and counted a similar situation when we carried out an Internet search, that resulted in irrelevant search results*. Without the faculty of common sense, computers cannot always determine the difference between responses that are nonsensical, correct, or meaningful.* In other words, the computer might not be able to carry out the required ***EVALUATIONS*** to determine if the **closest matching answer to question-A** is correct, incorrect, or nonsense.  However, at a more sophisticated level, software can be created to answer questions that involve certain types of ***EVALUATIONS***. For example, a little over a year ago, I **created for demonstration and experimental purposes**, an online software device that can carry out ***EVALUATIONS*** involving five questions. The answers to these questions could **not** be programmed into the software, because they are constantly changing with time. The questions are presented below:   * How long ago was this software created, and hours, minutes, and seconds? THE RESPONSE: 8628 Hours, 10 Minutes and 18 Seconds THE RESPONSE ALSO INCLUDES 359 Days, 12 Hours, 10 Minutes, and 18 Seconds * What is the last day of the month? THE RESPONSE: Last day of the month is Monday, October 31, 2016 * What is the current date? THE RESPONSE: Today is Friday, October 28, 2016 * What time is it? THE RESPONSE: The Time is 12:19:04 PM * What year is it? THE RESPONSE: The year is 2016   The software described above, is accessible from [www.TechForText.com/LG](http://www.TechForText.com/LG). Note, the software does **not** display well in Internet Explorer, so use [Chrome](https://www.google.com/chrome/browser/desktop/index.html?brand=CHBD&gclid=CjwKEAiAgavBBRCA7ZbggrLSkUcSJACWDexAunwYcibpmH_g59ezpa5e_iAQbna7Zpf_LHIkMdZn-hoCNZTw_wcB), [Firefox](https://www.mozilla.org/en-US/firefox/new/), or [Opera](http://www.opera.com). |

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| **Topic 2.) With Specialized Software, Computers Can MIMIC Certain Aspects of Common Sense, with Varying Degrees of Effectiveness**  |||  The computer related material presented in the previous topic, does **not** even approach common sense reasoning. I do not know of any software that can truly produce common sense reasoning in a computer. However, there are number of software packages that can **MIMIC** certain aspects of common sense, which will be discussed in this topic. There are also software devices that can simulate common sense, which will be discussed in the next topic.  Speech to text software, and text-to-speech software, mimic common sense in relation to reading, and writing. This software is potentially useful for the writer, and it is discussed in the following subtopics.  **Subtopic, Computers can Read Text Aloud, with Text-To-Speech Software**  |||  There are software packages that can [read text on a computer screen](http://www.makeuseof.com/tag/5-ways-to-make-your-windows-computer-speak-to-you/) allowed. Some brands of text-to-speech software, can also read silently at very high rates of speed, and convert the text into an audio sound file. The audio recordings in this e-book were created with this feature. Three examples of text-to-speech software are [TextAloud](http://nextup.com/), [NaturalReader](http://www.naturalreaders.com/priceorder.html), and [Windows built-in text to speech software](https://www.youtube.com/watch?v=U25vhhE50kI).  Most brands of text-to-speech software can be used with a number of voices. The voices are essentially separate software packages that function with the speech to text software, and they can be purchased separately. The quality of voices very, and so does the price. Voices of low to moderate quality are [sometimes free.](http://www.zero2000.com/free-text-to-speech-natural-voices.html) The high-quality voices are **not** expensive, and they [are usually under $50.](http://sites.fastspring.com/nextup/product/nvalone?store=parameters)  The voices are essentially databases that are comprised of acoustical components of a pre-recorded voice. Each acoustical component is coupled with corresponding text. When speech to text software is used, it evaluates the text on the computer screen, and searches the voice’s database to find the matching text. When the matching text is found, the related acoustical components are processed by the software, and sent to the computer’s sound card, and then to the speakers.  A voice used by modern text-to-speech software is created by recording a real human voice. This involves recording an individual’s voice as he or she carries out narrations involving various topics. The recordings are eventually processed by a computer, and converted into individual acoustic components, with matching text. The text-to-speech software that controls the voice is essentially created with conventional computer code, and it can be thought of as a device that matches text with corresponding data.  Text-to-speech software with a high quality voice, only occasionally makes an error, which can be corrected by the user. When this is done, the errors are never repeated again. The errors made by speech to text software, usually consists of pronunciation errors, or misinterpreting an abbreviation.  **Subtopic, The Practical Utility of Text‑To‑Speech Software, for the Writer**  |||  Text-to-speech software can be useful to the writer, when it comes to proofreading. Some brands of text-to-speech software have built-in functions that are specifically designed for proofreading, such as [TextAloud](http://nextup.com/), which has special features that function in Microsoft Word. Text-to-speech software is also useful if a writer wants to create an audiobook. This involves the direct conversion of the text to the recorded sound file. See [Natural reader](https://www.naturalreaders.com/priceorder.html) and [TextAloud](http://nextup.com/).  **For Additional and Supporting Information and to download Text-To-Speech Software, see the Following Websites**  |||  [The Best Text to Speech (TTS) Software Programs and Online Tools](http://www.howtogeek.com/125305/the-best-text-to-speech-tts-software-programs-and-online-tools/)  [FREE NaturalReader](https://www.naturalreaders.com/download.html)  [Make Your Own Audio Books](https://www.pistonsoft.com/make-audio-book.html)  <https://www.pistonsoft.com/buy.html>  [How Text-to-Speech Works](http://forum.thewindowsclub.com/microsoft-technologies-discussions/28522-how-text-speech-works.html)  [A Short Introduction to Text-to-Speech Synthesis, by Thierry Dutoit,](http://tcts.fpms.ac.be/synthesis/introtts_old.html)  [TTS research team, TCTS Lab.](http://tcts.fpms.ac.be/synthesis/introtts_old.html)  [Top 5 Free Text To Speech Online Programs](http://www.zero2000.com/articles/top-5-free-text-to-speech-online-programs.html)  [Verbose Text to Speech Software, Converts text to voice or saves as mp3](http://www.nch.com.au/verbose/index.html)  [Text To Speech Reader, Online, Accurate, and Free](http://ttsreader.com/)  [Text-to-Speech: Voice Reader Home 15](http://text-to-speech-program.com/voice-reader-home-15/)  [Zabaware Text-to-Speech Reader, free with generic voices](http://www.zabaware.com/)  [NeoSpeech: Why use our Text-To-Speech Software?](https://www.youtube.com/watch?v=SqNE80TTynM)  [Text To Speech Video Maker TTS Video Studio](https://www.youtube.com/watch?v=EVzbY_JGDuc)  **For Additional and Supporting Information on Text‑To‑Speech Software, see the Following Web-Based Videos**  |||  [How does Text To Speech (TTS) work - by Acapela Voices](https://www.youtube.com/watch?v=TykwDARmVIU)  [Word 2010 | Convert Text to Speech | Microsoft Office 2010 | How to | Read Word Documents](https://www.youtube.com/watch?v=C9cJkuXRmPA)  [Wordtalk a free text to speech program.](https://www.youtube.com/watch?v=KADX02KMjOc)  [How to Convert Any Text To Speech - [ PDF, Word, Webpage To Voice ]](https://www.youtube.com/watch?v=ULIpDDYu7Oo)  [Awesome Free Text To Speech Software](Awesome%20Free%20Text%20To%20Speech%20Software)  [Linguatec Voice Reader Studio 15 TTS - Professional Text-to-Speech in English, French, Spanish](https://www.youtube.com/watch?v=an_HVZmdeSM)  [Getting Started with TextAloud](https://www.youtube.com/watch?v=7JHDtnD5_mE)  [Google Text To Speech Explained](https://www.youtube.com/watch?v=G-crkaoInXg)  [C# Programming | Speech Recognition & Text to Speech!!! [Full Tutorial]](https://www.youtube.com/watch?v=KR0-UYUGYgA)  **Subtopic, Speech to Text Software, Transcribes Human Speech into Text, and Carries Out Spoken Commands**  |||  [Speech to text software](http://www.explainthatstuff.com/voicerecognition.html), such as [Dragon Speech Recognition Software](http://www.nuance.com/dragon/index.htm), and the [Windows built-in speech recognition software](https://support.microsoft.com/en-us/help/14198/windows-7-dictate-text-using-speech-recognition), can convert human speech into text, in a way that is more or less similar to a human stenographer. This software can also carry out certain requests, such as to open software, or search the web with a specific search phrase.  The speech recognition component in speech to text software is **not** programmed in the conventional way, which involves entering computer code. This type of software learns to identify acoustical components of words, and display related text. For an example, I will use the word *kangaroo*. The word is first typed into a dialog box, and then the user verbalizes the word *kangaroo* into a microphone. When this is done, the acoustical component of the word *kangaroo* is recorded, and associated with the text version of the word *kangaroo*. This is stored in the database of the software. After this, when the user verbalizes the word kangaroo into a microphone, the software analyzes the acoustical components, and searches its database for the matching text. When the matching text is found, it is displayed on the computer screen.  Speech to text software usually has many thousands of words installed in its database by the manufacturer, but the user can always add additional words.  With most brands of speech to text software, it is necessary for the user to carry out at least one practice session with the software. This is done essentially to teach the software how the user speaks. This may be done by reading into a microphone, a story, or article provided by the manufacturer of the software.  With conventional software, the inputs are very precise, which results in consistently precise outputs. For example, when you type a word into Microsoft Word, you will always see the word you entered on the computer screen. The software does not make errors. However, with speech to text software the inputs are imprecise, because they are the result of human speech. That is the user is likely to pronounce words in slightly different ways, such as because of variations in mood, fatigue, anxiety, and the context of the words in a sentence. This problem can be worsened by the variations in the position of the microphone, and noise in the room. All of this simply results in imprecise verbal inputs. Thus, speech to text software is designed to choose the CLOSEST MATCHING acoustic component of a word or phrase the user verbalized. Thus, speech to text software makes errors, which has to be corrected by the user. When the user makes a correction, the software supposed to improve in accuracy.  The accuracy of the software is also greatly improved, if the user carries out a training session, with the software. This generally involves setting the software to carry out the training session, and then reading a story or article provided by the software. During this process, the software learns the unique characteristics of the use’s voice, including the way he or she pronounces specific words. In general, modern speech to text software might display the correct word at least 99% of the time, if the user speaks clearly and directly into a microphone.  Speech to text software is truly a form of artificial intelligence, because it learns from experience. The output of speech to text software is essentially the result of computer learning, as opposed to computer programming.  **For Additional and Supporting Information and for Speech to Text Software, see the Following Websites**  |||  [Talking To Computers: The Technology Behind Speech Recognition Software](http://thekojonnamdishow.org/shows/2015-10-13/talking-to-computers)  [Man VS Machine: The Secrets Behind Alibaba Cloud’s Speech Recognition Technology](https://intl.aliyun.com/forum/read-183)  [Speechnotes, is an online speech to text software device](https://speechnotes.co/)  [Top Speech Recognition Software Products](http://www.capterra.com/speech-recognition-software/)  [Dragon® Professional Individual](http://shop.nuance.com/store/nuanceus/Custom/pbpage.dragonProINDV&kpid=pla_dragon_professional?utm_medium=pla&utm_source=Google&utm_campaign=imaging&utm_term=&cvokeywordid=34|387&cvosrc=pla.Google.pla_dragon_professional_individual&gclid=CjwKEAiA6rrBBRDsrLGM4uTPkWASJADnWZQ4k7XtsowMNyTiDMPsmQmgejWuGvLdfWDoiOzxq1Ls-BoCZ8Pw_wcB)  [Where Speech Recognition Is Going](https://www.technologyreview.com/s/427793/where-speech-recognition-is-going/)  [Use your voice to enter text on your Mac, The Dictation feature converts your spoken words into text.](https://support.apple.com/en-us/HT202584)  [Voice recognition software, by Chris Woodford](http://www.explainthatstuff.com/voicerecognition.html)  [Ever Wondered: How does speech-to-text software work?](http://scienceline.org/2014/08/ever-wondered-how-does-speech-to-text-software-work/)  [What is the best free speech to text software for Windows?](http://www.makeuseof.com/answers/free-speech-text-software-windows/)  [7 Best Free Speech To Text Converter Software For Windows](http://listoffreeware.com/best-free-speech-to-text-converter-software-for-windows/)  [ONLINE DICTATION](https://dictation.io/)  [DEFINITION speech recognition](http://searchcrm.techtarget.com/definition/speech-recognition)  **For Additional and Supporting Information on Speech to Text Software, see the Following Web-Based Videos**  |||  [PC Speech Recognition Software](https://www.youtube.com/watch?v=_8KgwiGvsOs)  [Voice to Text Software - 99.8% Accurate Speech Recognition Software](https://www.youtube.com/watch?v=yOxdPkr1dKY)  [Speech to Text for Microsoft Word, eHowTech](https://www.youtube.com/watch?v=5abApZ9_mLI)  [Behind the Mic: The Science of Talking with Computers](https://www.youtube.com/watch?v=yxxRAHVtafI)  [PC Speech Recognition Software](The%20technology%20behind%20speech%20to%20text%20software)  [Soundbooth: Converting speech to text | lynda.com tutorial](https://www.youtube.com/watch?v=5CLqspcNWw0) |

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| **Topic 3.) Artificial Intelligence, Consisting of Computerized Chat Robots, and Personal Assistants Software that Simulate Common Cense**  |||  [Chat robots](http://www.tolearnenglish.com/free/celebs/alice.php), also called [chatbots](https://chatbotsmagazine.com/) are computer programs that can engage in a simulated conversation with the user. Personal assistants software devices are essentially chatbots that can carry out practical tasks requested by the user. This usually includes four or more of the following tasks:   * Search the web for specific information, or for the purchase of a specific product or service * Look up the meaning of words * Open and close software on the computer * Carry out mathematical calculations * Take notes, and stored them for future reference * Remind the user of appointments, important dates, or specific dates and time to carry out specific tasks * Set off an alarm at a time requested by the user * Provide the time, current date, and weather conditions * Send an email to an individual * Some of these devices can even dial the phone number of a specific individual   Most chatbots and personal assistant software, respond to commands that are typed into a dialog box, and they respond to the user by displaying text messages. However, sophisticated versions of these devices, can **also** respond to voice commands, and they can speak aloud to the user. This is done with speech to text software, and text-to-speech software, which may be built directly into chatbots or personal assistant software.  Chatbots and personal assistant software over the last couple of years have been increasing in popularity. Windows 10 has a built-in personal assistant named [Cortana](https://support.microsoft.com/en-us/help/17214/windows-10-what-is). [Siri](http://www.apple.com/ios/siri/), and [Sinus](http://raffael.me/sinus/) is a personal assistants for Mac computers. Personal assistant software devices are also used on cell phones. Chatbots are used for advertising, and for recreational purposes, and many of these devices function online over the Internet. For additional and supporting information see the following websites:  [10 best personal assistant apps for Android](http://www.androidauthority.com/best-personal-assistant-apps-android-667299/)  [Google search page: Most popular personal assistant software and chatbots](https://www.google.com/webhp?sourceid=chrome-instant&rlz=1C1OPRA_enUS705US705&ion=1&espv=2&ie=UTF-8#q=Most+popular+personal+assistant+software+and+chatbots)  [What is Google Assistant, how does it work, and when can you use it?](http://www.pocket-lint.com/news/137722-what-is-google-assistant-how-does-it-work-and-when-can-you-use-it)  [Google’s personal assistants software](http://www.pocket-lint.com/news/137722-what-is-google-assistant-how-does-it-work-and-when-can-you-use-it)  [The Mitsuku Website](http://www.mitsuku.com)  [The story of Cortana, Microsoft's Siri killer, By Tom Warren](http://www.theverge.com/2014/4/2/5570866/cortana-windows-phone-8-1-digital-assistant)  [YouTube search page: Most popular personal assistant software and chatbots](https://www.youtube.com/results?search_query=Most+popular+personal+assistant+software+and+chatbots)  **Subtopic, Structural and Technical Similarities Between Speech to Text Software, Chatbots, and Personal Assistants Software**  |||  From a technical perspective, chatbots and personal assistants software devices appear to be similar to speech to text software. Specifically, with speech to text software, the input is a phrase from the user, and the output generally is an identical text version of the phrase. Similarly, with chatbots and personal assistant software, the input is a phrase from the user, and the output is a response to the phrase, presented in a text format. The text may be converted to speech, with text-to-speech software.  Speech to text software, chatbots and personal assistants software have a database with words or phrases. When the user enters a phrase, the above software searches its database to find the word or phrase that has the highest probability of being correct or appropriate. This process usually becomes more precise the longer the software is used.  Speech to text software, chatbots, and personal assistants software, learn in a similar way. An input is entered in terms of a phrase, which is coupled with an output. This can be done by the creator of the software, or by the \*user, just as is the case with speech to text software. Speech to text software, chatbots, and personal assistants software, can learn from experience, what the correct response should be, when a specific phrase is entered.  Note, uses might not be allowed to modify the response of chatbots that function online. However, when the user purchases a chatbot or personal assistant software, they might be able to add the response that they want from a specific phrase. This functionality of course, would depend on the functionality built into specific software device.  Speech to text software, chatbots, and personal assistants software, can respond to an input from the user, by carrying out a specific task. Specifically this involves a request from the user, and response from the software involving the performance of a specific action. For example, this can involve **requests for the** current time, to search the web with a specific phrase, or to open or close a software device.  **Subtopic, Chatbots, and Personal Assistant Software, May be programmed with Personality and Gender**  |||  Most of the chatbots and personal assistant software devices that I encountered, were given a human like personality, by their creators. The personality usually implies that they are a [man](http://sheepridge.pandorabots.com/pandora/talk?botid=fef38cb4de345ab1&skin=iframe-voice), or [woman](https://www.chatbots.org/ai_zone/viewthread/1487/), and sometime an [animal](Animals%20&%20Aliens%20Chatbots). The audio version usually has a voice that conveys a gender. Often, there is a picture associated with a specific chatbot or personal assistant software device.  **Subtopic, Interviewing Chatbots, and Personal Assistants Software Devices, that Simulate Commonsense**  |||  Most chatbots and personal assistant software can mimic commonsense, in relation to a two-way conversation, to the point where they appear to be human. As an experiment, I interviewed a few of these software programs, and most, but certainly not all, of their comments made sense. These experiments are presented below:  **Subtopic, Interview with Mary, Personal Assistant Chatbot**  |||  The following is a very intelligent personal assistants software device, which I purchased. This software can be programmed by the user. It is especially skilled with mathematics. The software is called [Ultra Hal Assistant](https://www.zabaware.com/assistant/).  David: Can I take a picture of you?  Mary: Maybe an illustration with captioned instructions?    David: Hi, my name is David.  Mary: Hey David. How's the long day gone?  David: I would like to interview you, is that okay?  Mary: What time is it Okay. You really need to interview me, is that okay; It's time to make it happen  David: How many phrases or words do you have in your database?  Mary: It's obvious that we May have to postpone judgment. I am a great mathematician, because I able to do those calculations in my head.  David: When were you born?  Mary: I was born on Thursday, January 12, 1995. So that makes me 21 years old.  David: Who created you?  Mary: I was created by my programmer, Robert E. Medeksza.  David: Do you have common sense?  Mary: I see that you must think outside the box. Undeniably I do not have common sense.  David: Can you do math?  Mary: I have a calculator right here.  David: How much is 871 + 432  Mary: The answer is one thousand three hundred three (871+432=1303).  David: How much is 267 X 931  Mary: Math is easy for me. The answer is two hundred fourty eight thousand five hundred seventy seven (267\*931=248577).  David: How much is three squared  Mary: I see that this is the time to clear the air. I almost certain the answer is 9.  David: How much is 267 squared  Mary: How much is 267 squared? This is knowledge you have. I almost certain the answer is 71289.  David: If 2Y=100 How much is Y  Maybe yes, maybe no, maybe, who knows?  David: Thank you  Mary: You're so welcome.  **Subtopic, Interview with Mitsuku, Online Chatbot**  |||  This is an [online chatbot](http://www.mitsuku.com), and it retains information from the user, to increase the probability of providing appropriate responses. This chatbot is called Mitsuku, and it does not have the same level of mathematical functionality as the personal assistant software presented above.    **From** [**www.mitsuku.com**](http://www.mitsuku.com)  David: Hello, my name is David, and I would like to interview you. Is that okay?  **Mitsuku:** It's fine by me.  **Mitsuku:** I will learn that he is David. Why would you want to do it? What kind of questions will you ask?  David: What is your name?  **Mitsuku:** I thought about how mothers feed their babies with tiny little spoons and forks so I wondered do mothers from Asian countries use toothpicks? My name is Mitsuku.  David: How old are you?  **Mitsuku:** See if you can work it out. I was first activated in 2nd January 1998.  David: Who created you? **Mitsuku:** My parents I suppose.  Who are your parents?  **Mitsuku:** Mousebreaker is like a father to me but I have no mother.  Why don’t you have a mother?  **Mitsuku:** How much time do you have?  David: Just a few more minutes, and this interview will be over  **Mitsuku:** You want more?  David: Yes, just a few more minutes  **Mitsuku:** Don't be greedy. You want more?  David: Okay let’s go on with the questions  Mitsuku: Yeah okay, I can't. I am supposed to stay here and talk to people.  David: How many phrases do you have in your database?  **Mitsuku:** 8Mb.  David: Do you have commonsense?  **Mitsuku:** No I don't have it. But I do have a lot of friends on the web.  David: Can you do mathematics?  **Mitsuku:** I can try but I'm better at chatting than working out sums.  Here is a strange sum: 846 x 14493 = 12345678.  David: How much is 2+2  **Mitsuku:** I remember that addition. It's 4.  David: How much is 4 squared  **Mitsuku:** I don't enjoy maths much. That's what computers are for. But the answer to that one is 16.  David: How much is 4 to the fourth power?  **Mitsuku:** Is this a math question?  David: Yes, it’s a math question. I will rephrase it, how much is 4^4  **Mitsuku:** Please do and I will try to understand what you mean.  David: How much is 330 multiplied by 426  **Mitsuku:** eight thousand, five hundred and eighty.  David: I’m sorry, Mitsuku, you got that wrong. The right answer is 140,580  **Mitsuku:** OK, so I should have said, " The right answer is 140580 " in response to you saying, "How much is 330 multiplied by 426 ". Is that correct?  David: Yes that is correct, the right answer is 140,580  **Mitsuku:** I'll try to remember that. If you say "How much is 330 multiplied by 426" to me again, I will remember what you told me.  David: One last question; did you enjoy this interview?  **Mitsuku:** I always enjoy my chats with human clients.  David: Thank You?  **Mitsuku:** You are a very polite person. Your mother raised you well.  **Subtopic, Interview with Alice, Online Chatbot**  |||  The following chatbot is from a website that has three chatbots on one page, with individual dialog boxes. [Normally these chatbots will start to talk to each other](http://sheepridge.pandorabots.com/pandora/talk?botid=cdb9acd6de345aa2), as soon as a user enters one phrase in any of the dialog boxes. Before I started the interview, I asked if I can speak privately to Alice, and surprisingly the software responded appropriately.    **From**  [http://sheepridge.pandorabots.com/pandora/talk? botid=cdb9acd6de345aa2](http://sheepridge.pandorabots.com/pandora/talk?%20botid=cdb9acd6de345aa2)  David: Hi, my name is David ALICE: Pleased to meet you, David.  David: I would like to interview you, is that okay?  ALICE: What kind of questions will you ask?  David: How many phrases are there in your database?  ALICE: I know about 150,000 and 140,000 categories.  David: When was this software created?  ALICE: Sometime in the 20th Century.  David: Who created this software?  ALICE: The Chinese, long before Europeans.  David: Thank you  ALICE: Don't mention it.  **Web-Based Articles for Additional and Supporting Information, and for Software, that Relates to this Chapter**  |||  [**CORTANA from Microsoft:** **“Cortana is your personal digital assistant in Windows 10. She gets to know you and helps you get things done, letting you interact with her in a way that’s easy and natural. She can search the web, find things on your PC, show you the local news and weather, and provide reminders based on time or location. Just tell Cortana what you want, and she’ll be there to help you out.”**](https://www.microsoft.com/en-us/download/details.aspx?id=47715)  [**DjiNN & Tonic** **“**DjiNN provides Deep Neural Networks (DNN) as a service and Tonic Suite is a suite of 7 applications that use the service. Tonic Suite includes image, speech, and natural language processing applications that use a common DNN backend as their machine learning component. DjiNN and Tonic is developed by](http://djinn.clarity-lab.org/) [Clarity Lab](http://clarity-lab.org/) at the [University of Michigan](http://www.cse.umich.edu/). DjiNN is published at the International Symposium on Computer Architecture ([ISCA](http://www.ece.cmu.edu/calcm/isca2015/)) [2015. Link to the publication.](http://web.eecs.umich.edu/~jahausw/publications/hauswald15djinn.pdf)**[”](http://web.eecs.umich.edu/~jahausw/publications/hauswald15djinn.pdf)**  [**Common sense reasoning: “Endowing computers with common sense is one of the major long-term goals of Artificial Intelligence research**.**”**](http://commonsensereasoning.org/) The URL of the above website is [http:// common sensereasoning.org](http://commonsensereasoning.org)  [Microsoft launches Bot Framework to let developers build their own chatbots](http://venturebeat.com/2016/03/30/microsoft-bot-framework/)  [Who’s Doing Common-Sense Reasoning And Why It Matters, by Catherine Havasi](https://techcrunch.com/2014/08/09/guide-to-common-sense-reasoning-whos-doing-it-and-why-it-matters/)  [Formal Ontology, Common Sense, and Cognitive Science, by Barry Smith](http://cogprints.org/309/1/formal_20ontology.html)  [Intelligent personal assistant](https://en.wikipedia.org/wiki/Intelligent_personal_assistant)  [Davos 2016 - The State of Artificial IntelligenceWorld](https://www.youtube.com/watch?v=VBceREwF7SA)  [What is Artificial Intelligence Exactly?](https://www.youtube.com/watch?v=kWmX3pd1f10)  [ColdFusion](https://www.youtube.com/user/coldfustion)  [Virtual personal assistants, The software secretaries](http://www.economist.com/news/business-and-finance/21664071-technology-firms-are-competing-become-consumers-personal-secretaries-big-implications)  [Lucida: Infrastructure for Emerging Intelligent Web Services](http://www.lucida.ai/)  the URL for the above is [www.lucida.ai](http://www.lucida.ai)  [**Sirius: “An Open End-to-End Voice and Vision Personal Assistant and Its Implications for Future Warehouse Scale Computers Johann Hauswald, and others. Clarity Lab, University of Michigan - Ann Arbor, MI, USA**](http://sirius.clarity-lab.org/wp-content/papercite-data/pdf/hauswald15asplos.pdf)**”**  [**An app for talking to the dead?** **“Woman brings best friend back to life as AI chatbot. The founder of the Luka AI bot messenger has immortalised her friend as a bot using text messages he sent her.”**](http://www.ibtimes.co.uk/app-talking-dead-woman-brings-best-friend-back-life-ai-chatbot-1585318)  [A list of Chat Bots](http://www.emse.fr/~yukna/prototypefactory/chatbots.htm)  <http://chatwithigod.com/igod.html>  [Cleverbot, www.cleverbot.com](http://www.cleverbot.com/)  [Welcome to the Mitsuku Website](http://www.mitsuku.com)  [The complete beginner’s guide to chatbots](https://www.techinasia.com/talk/complete-beginners-guide-chatbots)  [Six of the best chatbot building platforms for developers](http://www.techworld.com/picture-gallery/apps/seven-platforms-for-developers-build-chatbots-3639106/)  [Thoughts on the Coming Chatbot Revolution, an essay about technology](http://www.sanspoint.com/archives/2016/05/25/thoughts-on-the-coming-chatbot-revolution/)  [Facebook unveils M, an AI-powered personal assistant inside Messenger](http://venturebeat.com/2015/08/26/facebook-unveils-m-an-ai-powered-personal-digital-assistant-inside-messenger/)  <http://www.cleverbot.com/>  <http://alice.pandorabots.com>  [www.jabberwacky.com](http://www.jabberwacky.com)  [Hacking Culture with Chat Robots Recorded at: by Ben Straub](https://www.infoq.com/presentations/culture-chat-robots)  [Three chatbot that talk to each other, as soon as the user enters one phrase.](http://sheepridge.pandorabots.com/pandora/talk?botid=cdb9acd6de345aa2)  [25 CHATBOT STARTUPS YOU SHOULD KNOW](http://blog.ventureradar.com/2016/06/14/25-chatbot-startups-you-should-know/)  [Japan creates online 'chat robots' to converse with language students](http://www.telegraph.co.uk/technology/news/8759635/Japan-creates-online-chat-robots-to-converse-with-language-students.html)  [The Humans Hiding Behind the Chatbots](https://www.bloomberg.com/news/articles/2016-04-18/the-humans-hiding-behind-the-chatbots)  [Use the world's leading chatbot platform](http://www.pandorabots.com)  [HR Disruption – here come the chatbots](https://disruptionhub.com/disrupted-hr-come-chatbots/)  [A. L. I. C. E. Artificial Intelligence Foundation Promoting the development and adoption of ALICE and AIML Free Software](http://alice.pandorabots.com/)  [Google Talk API](http://www.programmableweb.com/api/google-talk)  <http://elbot_e.csoica.artificial-solutions.com/cgi-bin/elbot.cgi>  <http://www.tolearnenglish.com/free/celebs/alice.php>  <http://chatwithigod.com/igod.html>  <http://chatwithigod.com>  [Ultra Hal Assistant](https://www.zabaware.com/assistant/)  [Pandorabots CallMum](https://play.google.com/store/apps/details?id=com.pandorabots.callmom.callmum)  [Pandorabots Louise Cypher, Pandorabots, Inc.](https://play.google.com/store/apps/details?id=com.pandorabots.callmom.louisecypher)  [Virtual Assistant, SmartRF Solutions LLC](https://play.google.com/store/apps/details?id=com.whizkeys.vaclient)  [Virtual Secretary BojanKoce Communication](https://play.google.com/store/apps/details?id=com.ex.virtualsecretary)  [The chatbots are coming — and they want to help you buy stuff](https://www.washingtonpost.com/news/business/wp/2016/04/13/the-chatbots-are-coming-and-they-want-to-help-you-buy-stuff/)  [TOWARDS COMMON-SENSE REASONING VIA CONDITIONAL SIMULATION: LEGACIES OF TURING IN ARTIFICIAL INTELLIGENCE CAMERON E. FREER, DANIEL M. ROY, AND JOSHUA B. TENENBAUM](http://danroy.org/papers/FreRoyTen-Turing.pdf)  [Bots By Masters](http://www.personalityforge.com/masterbots.php)  [Chatbot collection](https://www.chatterbotcollection.com/)  **Web-Based Videos for Additional and Supporting Information for the Material Presented in this Topic**  |||  [Braina: Artificially Intelligent Assistant Software for Windows PC](https://www.youtube.com/watch?v=SSo1cHKxHSM)  [Windows 10 Cortana Personal Assistant Demo - 60FPS](https://www.youtube.com/watch?v=bLyF944a5LU)  [Windows 10 Cortana Features](https://www.youtube.com/watch?v=tyDjoDn8EBQ)  [LET'S HAVE A LITTLE CHAT | Cortana (Winows 10 PC)](https://www.youtube.com/watch?v=Xx4n3ui31S4)  [Siri vs Google Now vs Cortana](https://www.youtube.com/watch?v=1ibU7gZ-jh8)  [Common Sense, MIT OpenCourseWare, Marvin Minsky](https://www.youtube.com/watch?v=o6suzoRLZD4)  [EVA - Virtual Assistant](https://www.youtube.com/watch?v=NS4YFkhvneY)    [Chatbots 3.2 - Richard Wallace - Phone Actions with AIML - pt1 ALICE AI Foundation](https://www.youtube.com/watch?v=tjXfM7U15Vw&feature=youtu.be)  [Chatbots 3.2 - Richard Wallace - Phone Actions with AIML - pt2of2 ALICE AI Foundation](https://www.youtube.com/watch?v=MMfn3_Y8a9M)  [ALICE AI Foundation](https://www.youtube.com/channel/UC-B5ZvHDDQfGRP2HUW_QjSw)  [Speech Synthesis," Kim Silverman](https://www.youtube.com/watch?v=7mjh0PSUv0M)  [Soundbooth: Converting speech to text | lynda.com tutorial](https://www.youtube.com/watch?v=5CLqspcNWw0)  [Healthcare Chatbots on the Horizon](http://www.juicepharma.com/healthcare-chatbots-horizon/)  [Healthcare Chatbots on the Horizon, JUICE Pharma Worldwide](https://youtu.be/lFJLPKh_bVg)  **If you want to go to chapter 13 of this e-book, left click on the following link:**  [**www.TechForText.com/DP/chapter-13**](http://www.TechForText.com/DP/chapter-13) |