Natural Language Processing

Natural language processing refers to the branch of artificial intelligence that relates to computers with the ability to understand text and spoken words in a similar fashion as humans can. NLP combines computational linguistics with statistical, machine learning, and deep learning models. These features enable computers to understand human language and speech patterns in the form of text and data, which allows it to understand the meaning of words and phrases, and to realize the intent behind the words. Uses of NLP are numerous and can be seen in GPS systems with Voice-activation, digital assistants such as Siri and Alexa, speech-to-text software and Chatbots, which are one of the more recent advances in this technology allowing AI to handle most of customer service with ease, directing people to necessary information as well as being able to redirect users to people if the bot is unable to answer the question itself. The use of NLP streamlines business operations as well as offering 24/7 support for people who need it, meaning information is accessible any time giving more time to users and businesses. The State of the art in natural language processing is systems like Siri, Alexa which can answer any question by searching for information you want, in seconds and providing an answer that best fits the question asked, this has advanced to things like Google Home, where you don’t need to be on a device to ask the question and it can respond from a small tablet or hub meaning you could be anywhere in a house, from a kitchen to bedroom and be able to get the information you need, these questions can be simple like, “what’s the temperature” to slightly more advanced questions like “What’s the scientific name of bald eagle” and it will be able to respond within seconds. This streamlines the process of acquiring information and allows more time to be spent on more important things like work or taking time off. The future of NLP is in 2 different paths, these paths are transformer models such as GPT-3, transformer models do not need to process sentences from beginning to end and instead identifies context that gives meaning to each word, and the other path is Dialogue Models in the form of systems like LAMDA, this will allow AI to communicate with people in a broad number of topics, unlike modern chatbots which are generally narrowly trained on topics. GPT-3 has become useful in generating software code and with basic instructions has been shown to develop complete programs in Python, Java and several other languages, this could be expanded and may result in complex code being able to be done in seconds, boosting the quality and quantity of code in any line of work, while LAMDA, if successful, could redefine help-desk and customer support, as well as usher in new categories of applications which could benefit everyone. NLP is a large amount of technologies and developments, that combine together to form NLP, these are things like deep learning and machine learning, The challenges that NLP usually faces are speech recognition, these can be in things like accents, dialect and pronunciation, this was shown when Siri was first released and some accents weren’t understood by the AI, leading to issues such as wrong outputs of question as it’s hearing different questions being asked or just answer at all. It also faces issues with Natural Language interpretation as homophones, words that are very common in the English dictionary such as rain, reign and rein, as well as homonyms such as quail(the bird) and quail (to cringe). Developments in Machine Learning and Language Interpretation will minimize these and allow more complex and to make smooth conversations or queries possible with Artificial Intelligence.

The impact of Natural Language Processing is immense, With AI becoming able to do a myriad amount of things, Chatbots will streamline processes within business, Answering FAQs, Directing Customers to information they need, Digital Assistants removing the need to search information online or ask questions to businesses as all the information can be found online within seconds of asking, GPS systems, giving accurate information on where you need to go when travelling, what roads are blocked, where accidents have occurred, speech to text translation will make subtitles more accurate on TV and will likely get to the point where it could be translated into foreign language text or even speech with good accuracy, The development and advancement on NLP will effect everyone, as AI become more reliable at retrieving information and sending it in response to any question, Businesses will be able to give information to customers 24/7 including information on products and business hours, Correct and Reliable information and news will be able to be received by people at ease with virtual assistants, so people can stop relying on Twitter and Facebook to get news about important topics such as Covid-19 and Vaccinations, with actual scientific evidence and information being publicly available with just one question, Roads will be easier to navigate for people as GPS assistants can give more precise information on where you need to go, potentially stopping you from missing a specific turn, and more reliable and effective translation can be done, meaning accurate subtitles for overseas content such as Foreign News, which can make information more worldwide accessible and help the political and public exchange of information whether it be holidays or political delegations and talks with leaders of other countries. The most affected people however will be customer service and support desk jobs, as they will no longer need to be 24/7 on call and with further development may not be needed at all as Chatbots and Virtual Assistants take their place answering the question that people need answering the most, jobs in translation or possibly coding can also be affected but likely to a lesser extent as GPT-3 would be able to write code and things like Google Translate become more and more accurate, however they would still be required in specific industries in case things go wrong, and can be important back-up if the AI don’t work as intended.

Within daily life, NLP is used in many of the things I use, on websites I visit, if I need assistance I have instant access to a chatbot which can help me figure out what I need done, If I’m looking for quick information I can ask Siri or if I need a simple task done I can ask them to do it for me, things like setting a timer for food in an oven or changing a setting like Low Power Mode when I’m worried my Phone Battery won’t last throughout the day. As a person who has grown up with Virtual Assistants and Technology, most things won’t change, as I’ve grown used to asking Virtual Assistants to do things, using chatbots to get help on things, and it will only deepen my dependence on it if the technology grows better and it becomes able to do more complicated responses on tasks and questions, Going into IT and Coding, GPT-3 will make my life easier as I can focus less on simple bits of code and focus more on difficult and better solutions to the given issue that my client has come to me with. Within my friends and family, outside of the increased reliance on the Digital Assistants similar things will occur, as my family won’t be heavily affected in terms of jobs and some friends will also get the added benefit of the digital assistants and the utility they have in any workplace.