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ISM 1

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Research Assessment #2

Date: September 9, 2021

Subject: Google Duplex and Its applications

MLA citation(s):

Leviathan, Yaniv, and Yossi Matias. "Google Duplex: An AI System for ACCOMPLISHING Real-World Tasks over the Phone." *Google AI Blog*, Google, 8 May 2018, ai.googleblog.com/2018/05/duplex-ai-system-for-natural-conversation.html.

Assessment:

Over the past few weeks, I gained an interest in discovering more about machine learning technologies and specifically technologies that use neural networks, which are really complex algorithms that mimic behavior like our brain. Due to this fond interest, I found Google Duplex. Google Duplex is a technology that has been developed by Google that mimics the natural language of humans and is able to create calls with the goal to accomplish simple tasks such as booking an appointment or ordering food from a restaurant. The article, "Google Duplex: An AI System for ACCOMPLISHING Real-World Tasks over the Phone" from the Google Blog really helped me gain a perspective over the impact of this technology and has led me to explore more to find out how neural networks work.

First and Foremost, through the article, I got to learn about how Google was able to create something unimaginable like essentially making a virtual assistant/robot talk and understand like a human with even our way of speech like using slang, having intermittent pauses, and even natural disfluencies (such as um.. and uh..) (Leviathan and Matias). I also

found out that they had created a real-time supervised learning model that updates on every single new situation to adapt to new circumstances and used a recurrent neural network (RNN) as the backbone of the algorithm and automatic speech recognition (ASR) technology (Leviathan and Matias). It's just so out of the box that it makes me wonder how they were able to train such a neural network algorithm that could effectively handle simple as well as complex sentences in human speech? I think this article truly provoked my curiosity for neural networks and since I know how wide-ranging and amazing its applications can be, then I want to learn more about the algorithm and the program logic concerning it. Furthermore, I want to know how Google developed this technology, what type of challenges did they face while developing this advanced technology, and how did they solve these adversities?

This new knowledge about the applications of neural networks in Google Duplex has helped me understand how in many similar ways, technologies such as search engines, recommended searches, and as well as real-time machine learning algorithms are created (Leviathan and Matias). I am now able to connect that these complex software were created through some of the same technologies for projects that require natural language processing, computer vision, or neural network algorithms to correctly predict user decisions based on historics or data. Many technologies that use neural network algorithms and deep learning, are facial recognition, navigation, Wi-Fi reliability, eCommerce (to recommend products and predict orders that could fail), fraud detection, forecasting for businesses, and the list just goes on as there is unlimited opportunity in the field. This opportunity intrigues me to get more involved in machine learning and actually put these algorithms into practice.

I want to continue to learn more about the thought process related to neural networks in machine learning and how someone could actually implement a complex neural network model that could solve real-world problems in the future. Through the knowledge I gained

from the article, it has helped me gain a definitive perspective on a specific algorithm in machine learning, specifically neural networks, and has increased my interest for applying machine learning.