Assignment 7

Artificial Intelligence

Dylan Johnson

Concordia University, St. Paul

CSC 101 Intro to Computer Science

Professor Susan Furtney

6/25/22

Over the last six weeks we have gone over so many topics that it would be impossible to know everything about all of them, especially in this short of a time period. After going over the basics of a lot of these topics I have found several of them to be very interesting. As a person that wants to be a developer, I will need to know a lot about code. I will need to know everything that is possible within a programming language in order to develop a program in its most efficient state. The trouble I am running into is I am not sure what I want to develop. There are so many options, I could join a team already working on something, I could start a completely new project, I could bounce from team-to-team developing tools for their specific needs, there is so much that could be done that I do not know them all. With that being said, something that I think I would find very interesting, fascinating, challenging, worthwhile (the adjectives are endless) would be artificial intelligence, or AI.

AI is such a broad term within the computer field. It essentially encompasses anything a computer can do down to two words. The idea here is to program a computer to do an infinite number of tasks that it can learn from and grow from. While computers are only as smart as we make them, one day they will be able to complete tasks that we did not program it to do. That alone is both amazing and terrifying at the same time. While this possibility is far from a reality, it is still something to be considered. Now, the part of AI that I think would be incredibly fascinating to work on would be getting a computer to be able to interpret data on its own. The ability to take visual input, interpret it, and then give an output all by capturing images from a camera. This is known as computer vision.

Computer vision has been an area of study for over fifty years. However, in that time the field has made minimal progression. The idea of having a computer take visual data and turning that into something a computer can understand in real time is an extremely complicated process. Think of it this way, how does a computer work? It works in binary. Millions of ones and zeros working in the background to make it possible to use a modern operating system. Every detail about anything done on a modern computer is ones and zeros working to make you experience as efficient as possible. The idea of ones and zeros works great for any hexadecimal level data. IE word processing, mathematics, special characters, web browsing, colors, and much more. So, the question here is, how does one take a data from a camera, and turn that into binary data that a computer can understand? This idea has already been implemented in several different areas. Facial recognition software was a revolutionary technology in law enforcement that took still images of someone’s face and searched a database for similar image quality markers. This was a biproduct of computer vision. Another idea behind computer vision is autonomous cars. Being able to analyze the road as in real time to safely navigate the roadway. This is done by using the onboard computer and cameras to find predefined markers, whether that is other vehicles, road signs, the lines on the road, pedestrians, or any other possible object/thing that could be on the road.

All the things the human eyes can do in a split second, a computer has to take in each frame of an image. Then it has to convert those frames into something it can understand, and then execute a specific action or segment of code based on what is interpreted. The human eye has been trained over a life time to be able to process these images and make those split-second decisions. A computer is only as good as it is programmed. Say a new road sign is introduced, the human eye could quickly read that and know what is going on. If the computer is not programmed for it, it will not know how to interpret that sign. This is where machine learning comes into play, another branch of artificial intelligence. All of which will continuously play off of each other.

Artificial intelligence is such a broad field that it will be next to impossible for one person to be proficient in each aspect. With a lot of teamwork and knowledge bases being set up one day we will be able to have computers do anything, interpret anything. The idea is to essentially program a human brain. The amount of information that the human brain takes in, stores, and can call back on at any given time is incredible. Getting a computer anywhere close to that kind of capability would more than change just the world.