Overview

This assignment will help you identify everyday problems that may benefit from solutions that utilize artificial intelligence. You will learn to apply specific AI techniques (such as neural networks and machine learning) and evaluate their impact on you and on society as a whole.

Prompt

For the purpose of this assignment, pick a problem in your life that might benefit from the implementation of artificial intelligence. Write a paper describing the problem, your proposed solution, components that might be needed for your solution, and potential ethical concerns. Use the readings listed in the Module One Resources section as well as additional, outside resources you find through your own research. Include references and in-text citations using APA format.

Below are some examples of topics you may consider, but feel free to use problems you experience in your own life.

1. In today's fast-paced environment, many adults find it difficult to find the time to cook their own meals. Others lack the necessary skills in the kitchen. Describe a smart kitchen technology that would teach an adult how to cook a whole meal from start to finish. For example, this smart kitchen would need to recommend easy-to-follow recipes, help coordinate cooking times for multiple dishes, and select recipes that can be made with ingredients that the user already has, or ingredients that can be ordered and delivered to the user's home by the time they get home from work. What AI techniques could be used in such a system? What hardware and services would need to be in place for the system to succeed? How would you combine these elements into a viable product? Can you foresee any potential legal or ethical concerns that may arise?
2. With the rising cost of housing, workers are moving farther and farther away from their places of work and their commutes are getting longer. Self-driving car technology is just around the corner, but what effect will it have on traffic patterns? Self-driving cars will be able to pick an optimal route to their destination, but what if there were a central authority that steered them into routes that optimized the whole system? What AI techniques would you use to design such a system? What hardware would be needed to put it into place? Are there any ethical concerns with implementing this technology?
3. Personal assistants are permeating our lives. They help us organize our time, improve our productivity, and are slowly seeping into our personal lives. What AI techniques could you use to design a personal assistant that would help shape your behavior? Could it run on existing hardware? What aspects of your life would you be able to turn over to it? Would you let it schedule your work tasks, workouts, and family time? Why or why not?

Specifically, in your paper, you must address each of the following aspects of your chosen scenario:

- **Describe a real-world problem that would benefit from the application of AI.**
    - *How to act and react in various high-risk situations that we are increasingly becoming subjected to, such as shooters in public places, robberies, car-jackings, and other forms of violence that could result in injury or death.*
- **Propose a solution to a real-world problem by describing applicable AI techniques.**
    - *Algorithms that will first take in data to evaluate documented situations (of the type listed above) to learn the outcomes and what factors play the largest role in those. This data would include the location, time of day, weather and other environmental variables. It would include demographics of individuals involved, how they were acting just before the incident, and what they were wearing. Data will not include items that would not be available to a bystander at the time, such as the individual's social media, mental health, or other private information.*
    - *The outcomes will be aligned with all these factors, and then fed into an algorithm that will first recognize the listed data points (such as through a CCTV system or smart glasses), predict the likelihood that an individual or individuals will cause harm in some sort of situation, and then use Artificial Intelligence to to propose a plan-of-action for bystanders to avoid conflict, injury, or death.*
    - *The system would view the surroundings of the bystander(s) and propose a plan based on the current situation and environment; this would very much be similar to the system seen in the movie "Minority Report", but with algorithms making the predictions instead of psychics, and a decision making component for innocent bystanders, instead of focusing on apprehending the predicted perpetrator.*
- **Identify necessary system components, such as hardware or services, needed for your solution.**
    - *The system would need a visual component that could discern the variables needed for predictions and decisions. Machine learning would be required to teach the system what various objects are (both on a person and in the environment). For individuals, smart-glasses would be useful for both viewing the surroundings and also displaying the proposed decision tree to the user.*
- **Identify potential ethical concerns with your solution.**
    - *The most obvious ethical concern would be the prediction that a person could potentially commit some sort of dangerous act on others just based on the surroundings and their own behavior / look. This would absolutely result in many false-positives and could even cause unnecessary violence or apprehensions by law-enforcement. Not all situations escalate to the proposed predicted outcome, but individuals may still act as the situation was an inevitability, causing panic, fear, and the avoidance of many social situations and environments deemed dangerous by the algorithm. Likewise, if the algorithm were to suggest a plan of action that involved causing harm to the predicted assailant, even before the situation escalated to a point where such action was necessary, this could lead to*

unwarranted assaults and removal of freedoms of many individuals. Essentially, everyone would now no longer feel like they have control over their own lives and freedoms, as an algorithm would determine their future actions for them.

Note: You do *not* have to propose solutions to the ethical concerns at this point, but you should identify them.

Guidelines for Submission

Make sure to address every aspect of the prompt and pay special attention to the grading rubric. Your submission should be a 2– to 3–page Word document with 12-point Times New Roman font, double spacing, and one-inch margins. Sources should be cited according to APA style.