Artificial Intelligence (INT 404)

Report

AI in Smart Cities

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**INTRODUCTION**

Artificial Intelligence (AI) is playing an increasingly important role in the development of smart cities. Smart cities are those that use technology to enhance the quality of life for their citizens by making their cities more efficient, sustainable, and responsive to the needs of the community. AI is particularly well-suited for this task because it can help to analyse vast amounts of data, identify patterns and trends, and make predictions about future events.

In the context of smart cities, AI can be used to optimize and automate a variety of processes, such as traffic management, waste disposal, energy consumption, and public safety. For example, AI-powered traffic management systems can help to reduce congestion and improve traffic flow by analysing real-time data from sensors and cameras to adjust traffic signals and reroute vehicles.

AI can also be used to improve public safety by analysing data from security cameras and sensors to detect potential threats, such as suspicious activity or abnormal behaviour patterns. This can help to improve response times and prevent incidents before they occur.

Overall, AI has the potential to revolutionize the way that cities operate, making them more efficient, sustainable, and responsive to the needs of their citizens. However, it is important to ensure that AI is implemented in a way that is transparent, ethical, and respects individual privacy right

## Importance of AI in Smart Cities

1.AI is helping in improvising transport in Smart Cities

Technologists are leveraging computer vision and machine learning technology to transform urban transit infrastructure. One company to have taken a lead in this area is Hayden AI which developed the world’s first autonomous traffic management platform. The company automates complex processes and improves public services. The technology works to support a number of different public service vehicles including buses, street sweepers, airport security vehicles and police vehicles.

2.AI is helping in maintain Security

Although security camera footage is typically reviewed when a crime has been reported, this doesn't prevent the crime itself. Security cameras that use AI could analyse footage in real-time and detect criminal behaviour which can then be instantly reported and dealt with. These cameras can also detect people from their clothes, allowing the technology to find suspects quicker than ever. Smart cities can use AI to see their effect on the local environment, global warming, as well as pollution levels.

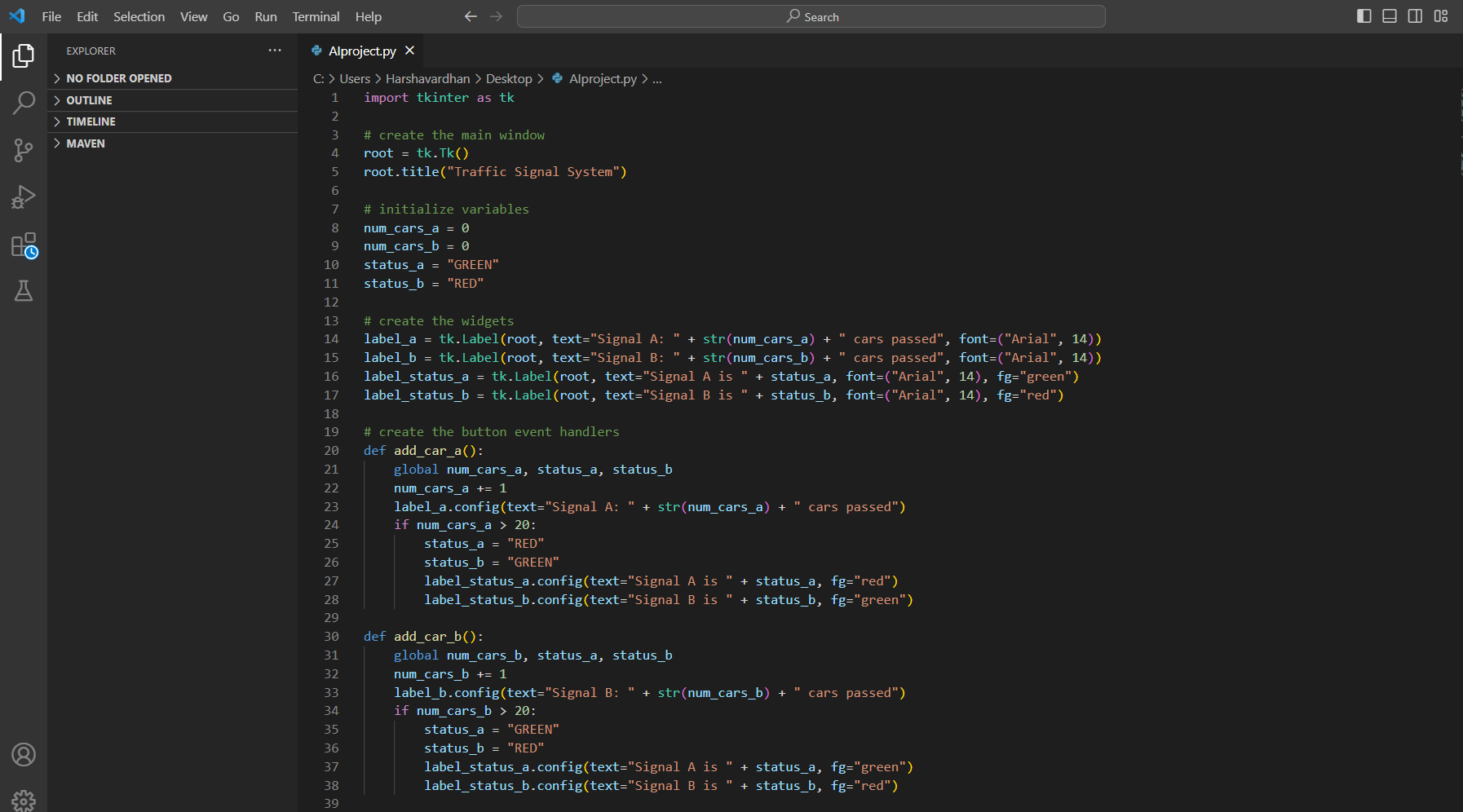
Using AI and machine learning for pollution control and energy consumption, allows authorities and cities to make well-informed decisions that are best for the environment. Smart cities also use AI to detect CO2 which can then lead to decisions around transportation. Another innovation to look out for is the Real-Time Response Centre (RTRC) predicted to emerge in the smart cities of the future. The RTRC is fed data from a range of sources and displays the aggregated intelligence on large-screen video displays, along with live feeds from cameras, traffic sensors and gunshot detectors.

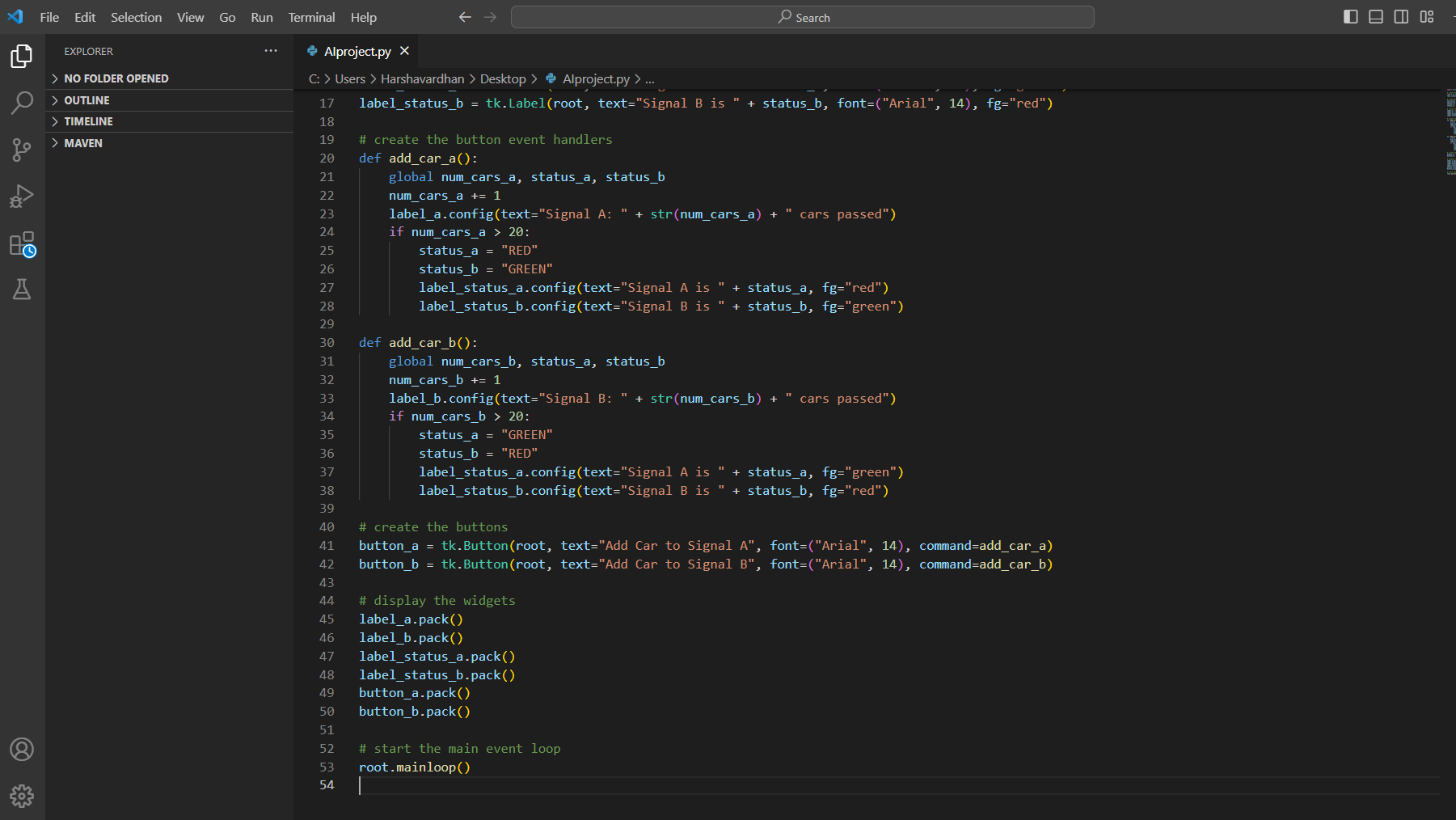
**Implementation of idea in project**

Implements a simple traffic signal system with two signals A and B. When the number of cars passing through one signal exceeds 20, that signal turns red and the other signal turns green. The GUI allows the user to input the number of cars passing through each signal and displays the current status of the signals.

In this prototype Radar sensors can identify the number of moving vehicles and update the values accordingly in the software system and as per the data received from the Radar sensors the traffic signals glow respectively.

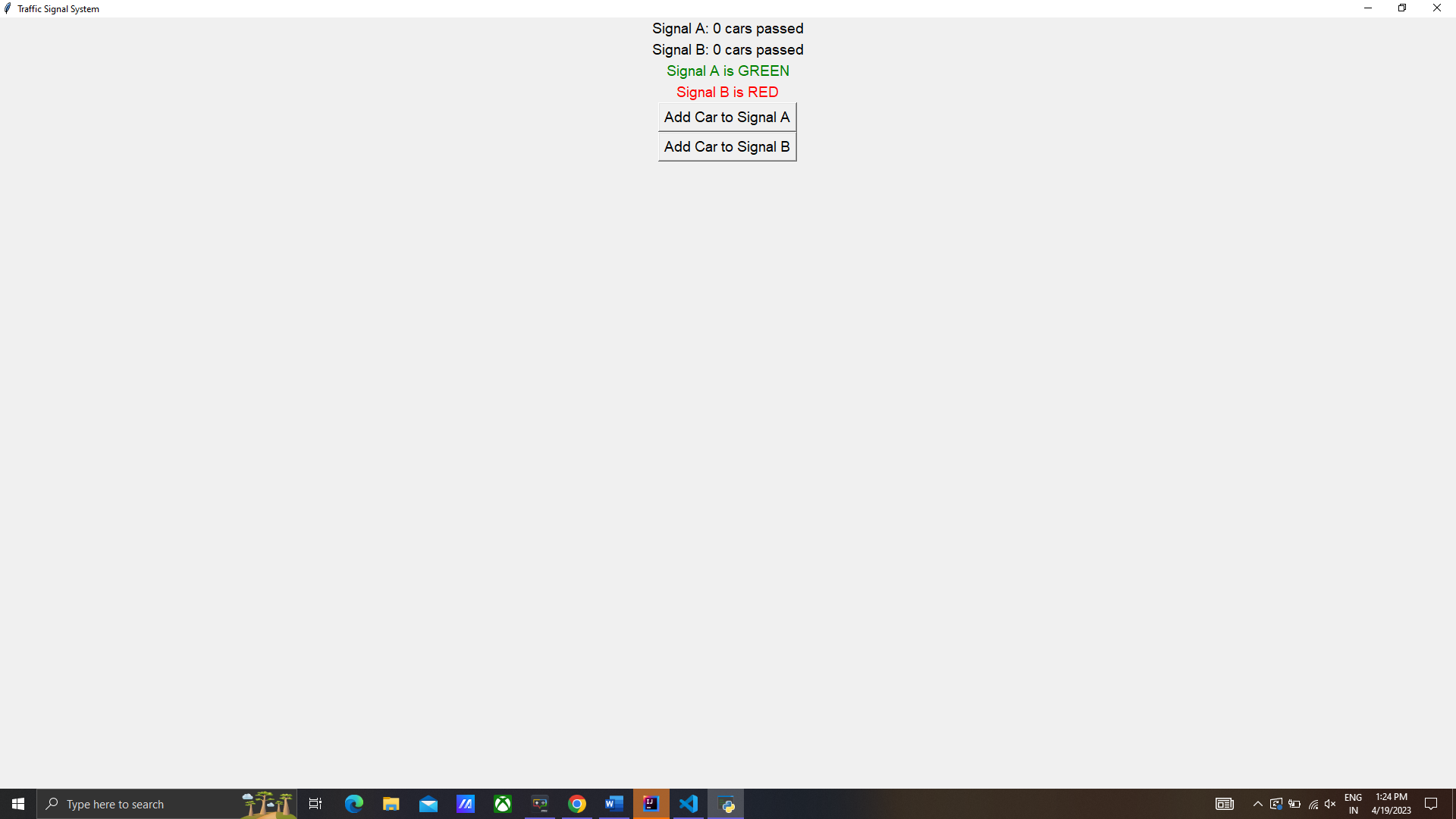
## Code of the Prototype

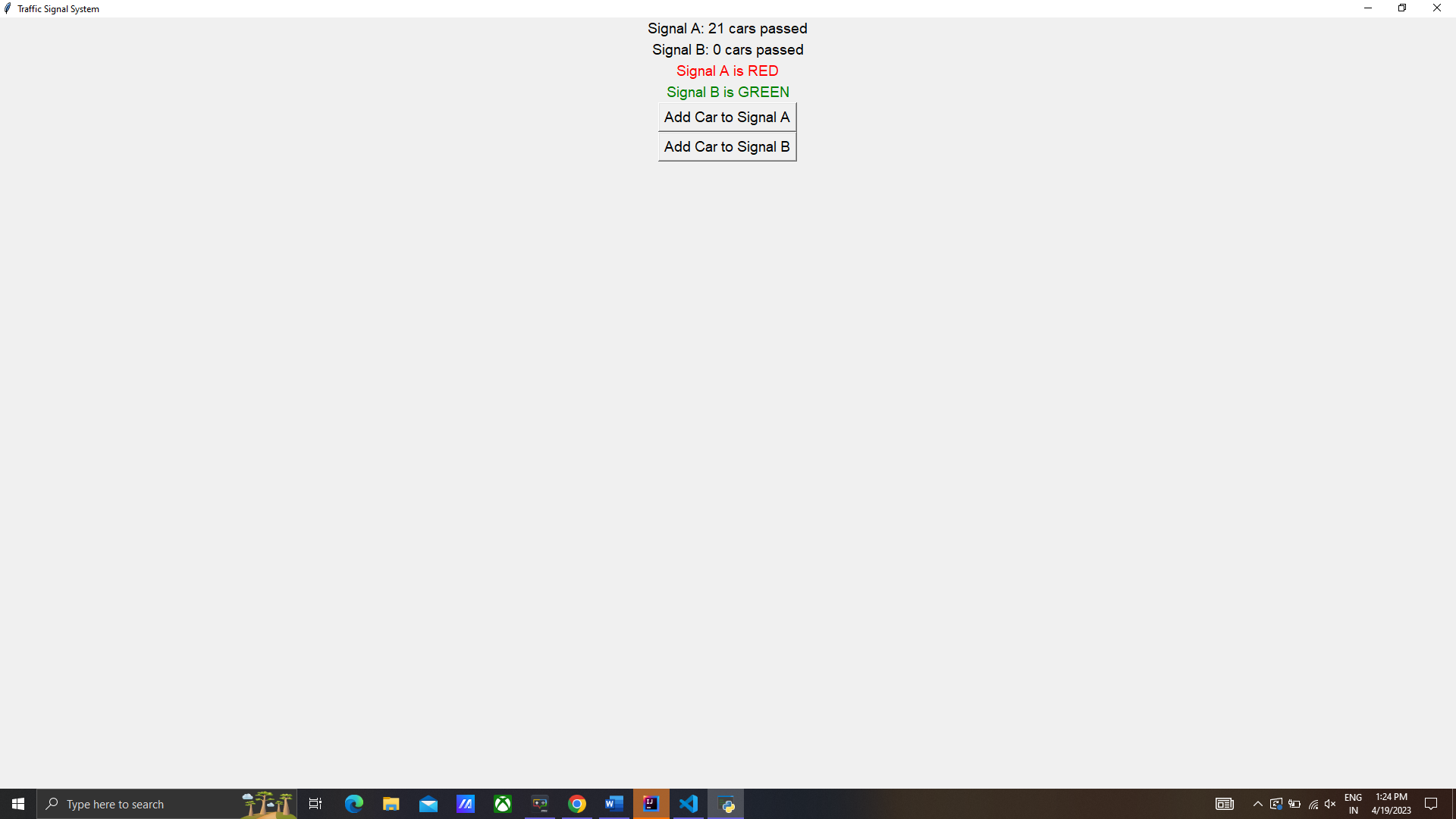




## Results of the Prototype

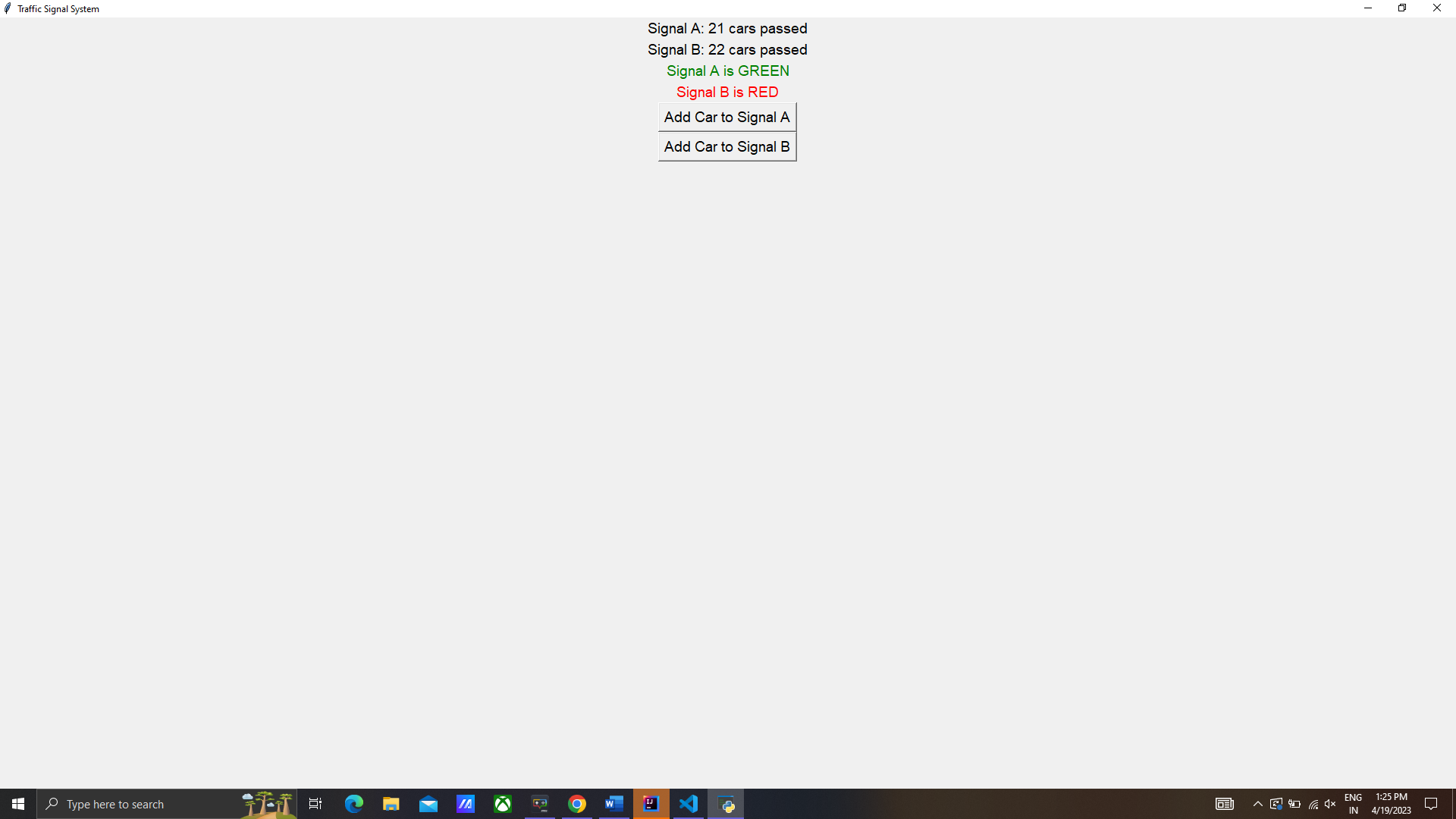
**Case I: No cars passed initially One Signal is Green and One signal is Red.**

 **One-way travelling is allowed.**

 **Case II: As the Limit exceeds 20 cars the signal is turned Red on Road A**

**Case III: As the number of cars in Signal B exceeds cars in the signal A the**

**signals turned Red on Road B**



**Conclusion:**

In conclusion, AI has the potential to transform smart cities by enabling them to become more efficient, sustainable, and resilient. By analyzing and interpreting large volumes of data generated by various sources such as sensors, cameras, and other IoT devices, AI can help cities make informed decisions and take proactive measures to address various challenges such as traffic congestion, energy consumption, waste management, and public safety. However, the success of AI in smart cities projects depends on various factors such as data quality, availability, privacy, and security, as well as stakeholder engagement and collaboration. Therefore, careful planning, implementation, and monitoring are crucial to ensure that AI is used ethically and responsibly, and that it benefits all citizens and communities in smart cities.

# THANK YOU