Ruch Wahadłowy

School Complex No. 6 named after John III Sobieski in Jastrzębie-Zdrój

Artur Nowak, Wojtek Wróblewski, Robert Zarzecki

Young Inventors

TRL 5

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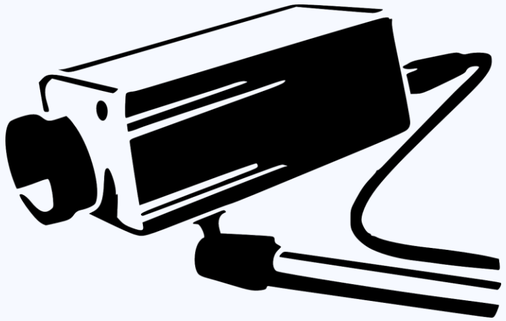
The Problems

01. Unnecessary time wasting at red lights

02. Potential danger

Consider a common scenario wherein one waits for the traffic light at a junction to transition from red to green. When observing an absence of oncoming traffic from the opposite direction, does this not elicit frustration?

The Solution



Solution 1

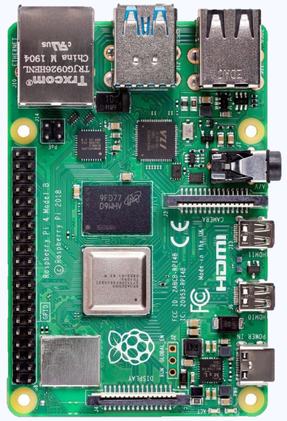
Our focus lies in enhancing safety within shuttle traffic.

Solution 2

Our project aims to integrate seamlessly with the existing traffic light system at minimal additional cost.

Solution 3

Leveraging the power of artificial intelligence, we can efficiently manage shuttle traffic.



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What is TRL?

Technology readiness levels (TRLs) are a method for estimating the maturity of technologies during the acquisition phase of a program. It has a scale of 1-9.

To further improve our project, we mainly need financial support. Our current goal is to buy a real traffic light and start testing with it. In the further future we hope to train our own AI model and get some more noise for better marketing and hopefully business propositions.

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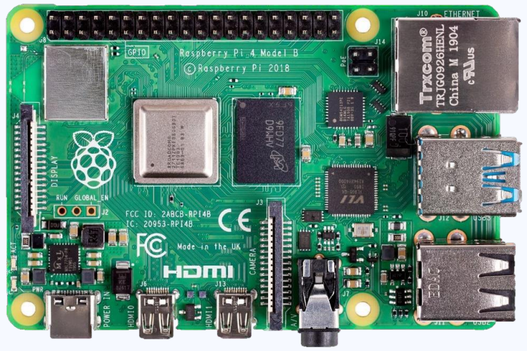
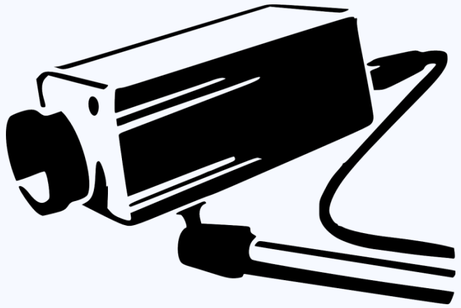
How it works?

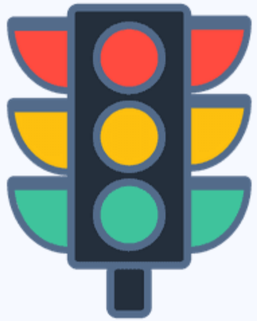
Our small system consists of three basic elements:



Raspberry Pi 4
(small, affordable and energy efficient single-board computer)



Cameras



Traffic lights

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3
2
10
1

Role of Raspberry Pi

The Raspberry Pi serves a pivotal role in our project as a versatile computing platform. Its primary function involves the analysis of data captured by cameras installed at shuttle traffic roads. Utilizing its computational capabilities, the Raspberry Pi executes a sophisticated artificial intelligence model tailored for image processing and pattern recognition. Upon analyzing the incoming data, this AI model makes real-time decisions regarding traffic light control within the shuttle traffic system. In essence, the Raspberry Pi acts as the central processing unit orchestrating the intelligent management of traffic flow, ensuring efficient and safe operation at shuttle traffic roads.

Are there any limitations?

- Raspberry Pi's limited computational power results in longer processing times for analyzing camera data compared to more powerful computers.
- We require more publicity or attention to secure additional resources for further project development.

The value of the project compared to the current state of technology

By leveraging advanced artificial intelligence algorithms running on the Raspberry Pi platform, our project optimizes traffic flow at shuttle intersections. This leads to reduced waiting times for commuters, minimizing congestion, and enhancing overall transportation efficiency.

Through real-time analysis of camera data and intelligent decision-making, our system enhances safety by proactively managing traffic conditions. It can detect potential hazards, such as vehicles running red lights or pedestrians crossing unsafely, and adjust traffic light timings accordingly to mitigate risks and prevent accidents.

Our project serves as a foundation for future innovations in traffic management. With ongoing research and development, there's potential to integrate additional features, such as predictive analytics for traffic patterns, adaptive signaling based on environmental conditions, and integration with autonomous vehicle networks. This continuous evolution holds promise for creating even safer and more efficient transportation systems in the future.

Current project development level

Our project is in an active phase of development, with ongoing efforts to refine and improve its functionality.
We are continuously iterating on the system to enhance its performance, reliability, and user experience.
Through rigorous testing and feedback loops, we aim to address any existing limitations and optimize the project for real-world deployment.
Safety is a paramount concern throughout the development process. We are dedicated to implementing robust safety measures and protocols to ensure that the final solution meets the highest standards of safety and reliability.
Collaboration with experts in the field and adherence to industry best practices further contribute to the project's evolution towards being a secure and dependable solution for traffic management.

Our Team

Authors

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Thank You

Thank you for your support and dedication to our project, shaping a safer future for all.

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