Ration Van Tracking Using Android Application

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Abstract:- In Andhra Pradesh, ration supplies are now distributed by ration vans. However, some people were unable to receive their ration on that particular day owing to a circumstance. The idea behind our concept is to use an app to track ration vans. The project is based on GPS technology, which allows users to determine the supplier's location and provides information about the supplier and the estimated time of arrival. The suggested method uses a database to provide fully integrated online ration van tracking. It offers the ability to follow the specific location of the ration vehicle on a Google map. They can also view information like supply details, date and time of the ration van's arrival, and supplier details.

Keywords:- Client Server Application, GPS, Google Maps API, Database.

I. INTRODUCTION

In State of Andhra Pradesh government has planned a scheme that provides eligible families in the area with door-to-door ration distribution. Nevertheless, there have been problems with this scheme's implementation, such as missing deliveries, protracted wait times, and non-existent vehicle arrivals. We are developing an Android app that utilizes a variety of technological methods so as to address these issues. These include the provision of product specifications, driver information, and dynamic GPS monitoring to track the whereabouts of delivery vehicles. Users will be able to significantly lessen the challenges they currently have while trying to acquire the door delivery schedule by using our app. Our Android application aims to bolster the State of AP's door delivery scheme's efficacy and efficiency .Our goal is to solve problems like missing delivery by leveraging technologies like GPS tracking. We want to give people who depend on the door delivery program for their ration supplies a more streamlined and dependable experience by leveraging our app. All things considered, our Android application is a big step forward in leveraging technology to solve the problems the people of the State of AP encounter when trying to access this vital service. Our Android app seeks to resolve several issues that State of AP door delivery scheme users encounter .For people who depend on the program to get their ration supplies, missing deliveries can be annoying and difficult. This is among the primary problems that our software aims to solve. So as to ensure that ration supplies reach their intended users on time, we want to bolster the precision and sturdy of the distribution process by utilizing GPS tracking and process scheduling. Our goal is to give users a more practical and effective manner to obtain their ration supplies and engage in the door delivery program by means of our app.

➤ *Motivation*

The goal of our Android application development is to solve issues that users of the door delivery program in the State of AP encounter. People would accept their change of ration owing to these issues, such as missed delivery. We plan to increase the distribution process' accuracy and dependability by using technology like GPS tracking, making sure that ration supplies get to the right people on schedule. Our overall goal in creating this project is to make the door delivery program in the State of AP more dependable and accessible, furthermore to make life easier for people who depend on this vital service.

➤ *Problem Statement*

Ration vans are now used in Andhra Pradesh to provide ration supplies. But because of a particular circumstance, some people were unable to receive their ration on that particular day. Using an app to track ration vans is the foundation of our concept. Based on GPS technology, the project provides users with the ability to locate suppliers and receive information about their whereabouts and estimated arrival times. Ration van tracking via a database is fully incorporated into the suggested system. You can use the Google Maps feature to track the exact location of the ration vehicle. In addition, they have access to information on suppliers, supply data, and the time of the ration van's arrival.

➤ *Objectives*

- To provide users with a more seamless and reliable experience when accessing the door delivery scheme, improving confidence in the service.

- To reduce the occurrence of missed deliveries, making the service more convenient and efficient for users.

➢ *Scope*

This project's scope is restricted to the creation and deployment of our Android application, which is intended to particularly address problems encountered by State of AP door delivery scheme users.

➢ *Advantages*

- Allowing for efficient tracking and management of ration distribution
- Improved confidence in the service.

➢ *Applications*

- To make sure that their ration supplies are delivered, people can utilize it to track delivery vehicles locations in real-time.
- It allows the Drivers to promptly notify the users of any essential announcement.

➢ *Organisation*

The outline of the paper is as follows: Section II begins with a review of the literature review. Section III provides information on the proposed methodology and architecture. The results and conclusion are covered in the fourth and final sections.

II. RELATED WORKS

Consumers buy rice, sugar, gasoline, kerosene, and other things at the ration shop in [1]. The products' accidental weight loss and the client's failure to buy the goods because the supplier bought them for another customer without a credit card are the two disadvantages, nevertheless. An RFID reader and GSM were used in the creation of this document after the customer's information was stored in a database. A user-friendly Android application will be created using this principle.

➢ *Advantages:*

It is a time-saving, cost-effective method that stops malpractices at ration shops, maintains data correctly, and minimises paperwork.

➢ *Disadvantages:*

Weight of the items may be imprecise due to human mistakes.

High technology and manual labour are two major problems with this distribution system. However, there is a lot of illicit activity associated with manual labour. The substandard quality and other illegal concerns of the goods are a result of the activity. The user database, which already has the user's "AADHAR" number and other information saved in it, is automated. To store the customer database, the thumb module of the system interface is connected to the microcontroller and PC.[2]

➢ *Advantages:*

It is possible to prevent the corruption and irregularities at ration shop.

➢ *Disadvantages:*

Rationing can artificially depress the price by putting constraints on demand

The purpose of the smart ration card is to increase openness between the public and the government. This system must be designed with client information in mind and must save data using an RFID reader. The microcontroller utilized to verify user authentication was attached to the reader. Hardware that is linked to the GSM via SMS domain assistance. Databases with user interface systems are necessary for Web services. In our system, users can be classified as District Admin, Admin, or User. Admin will manage all information at the local level. District administrators are able to maintain an overview of all transactions. Use of the system will be entirely up to the user. This method has the ability to lessen ration system corruption.[3]

➢ *Advantages:*

This system requires less human efforts for operation and is also very secure.

➢ *Disadvantages*:

They will sell the supplies to other parties without informing the clients at the end of the month if they are not purchased.

In [4] presents a new web-based application for tracking the location of friends and relatives. The proposed application uses GPS and the Google Maps API to gather and display location information, and aims to improve storage and data security for navigation-based technologies. The method employed in the application is service-oriented web development, which allows business model methods to be turned into processes that can be easily integrated. The key aim of the application is to provide a means of monitoring friends and relatives.

➢ *Advantages:*

Improves the storage and data security for navigation-based technologies.

➢ *Disadvantages:*

Only Suitable for web-based applications.

Users frequently receive information through push notifications, yet these notifications frequently cause the user to lose concentration on what they are doing at the moment. The authors suggest a unique information notification system to solve this problem, one that projects messages into the user's periphery through an interactive projection system. This "peripheral notification" technique lessens disruption to the user's focus by only interrupting their work if they happen to notice the message. Unlike conventional peripheral notification techniques, the suggested system is more adaptable and efficient since it is made to continue operating

even if the user's head position or field of view shifts. Results from experiments are shown to show how successful the suggested system is.[5]

> *Advantages:*

This system is designed to work even when the user's head position or field of view changes.

> *Disadvantages:*

Theoretically verified, But practical implementation is not discussed.

The methodology in [6] outlines the development of a GPS, GSM, and Arduino-based real-time car tracking and monitoring device. With the use of two software apps, Thing Speak and Freeboard, users can access the device's display to see their vehicle's current location on a mobile device via the internet. When it comes to how vehicle position is displayed, Thing Speak uses longitude and latitude charts, but Freeboard uses maps. In real-time testing, it was demonstrated that the system is helpful in assisting users in locating their automobiles in the event of theft. The system's objective is to give customers greater freedom in tracking and managing personal information and tangible assets, especially when it comes to transportation networks.

> *Advantages:*

This model helps in real-time tracking of vehicles and theft prevention.

> *Disadvantages:*

It involves usage of IoT Devices and GPS devices which will become expensive to implement in large scale situations.

III. METHODS

> *Architecture*

The proposed system model perfectly captures the overall structure of the entire application from its inception to conclusion. Figure 1 depicts the proposed system diagram. The Home page of our app contains two interfaces one for user and other for driver. The folks can log in or register after the application has been installed. To register as a user, you must provide some information, such as your name, email address, phone number, and password. Users could access their accounts after registering, guaranteeing a safe and customized experience. After launching the app, the user finds displaying item details, the driver's location, and driver information. The data is obtained from the database. The Driver can log in after the application has been installed. The Driver must allow GPS location permission because considering the location the cluster people data will be retrieved from the database. The Driver will add the item details from the add button and will schedule the delivery. The data is recovered from the database.
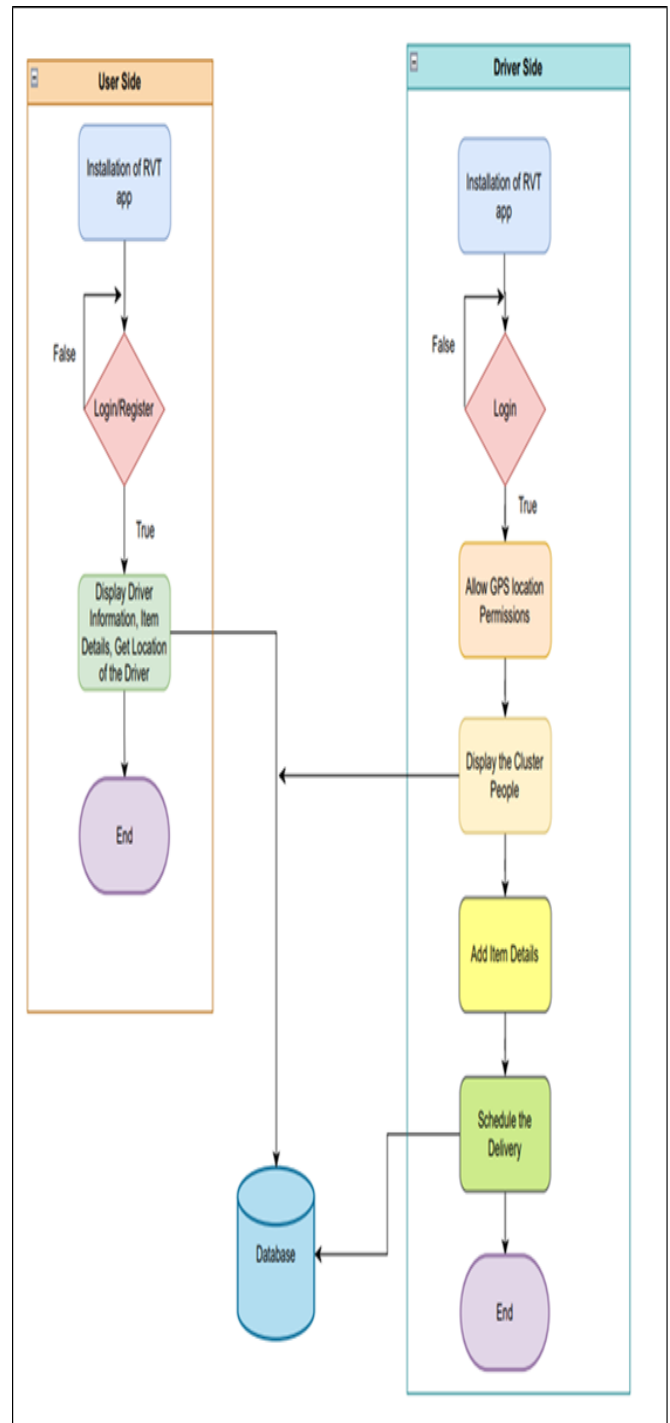

Fig 1 Proposed System Flow Diagram

IV. RESULT AND DISCUSSION

In this part, the outcomes of the proposed system are discussed. The outcomes are attained after the proposed approach is successfully implemented. Figure 2 represents the home page of our app which contains two interfaces one for user and other for driver.
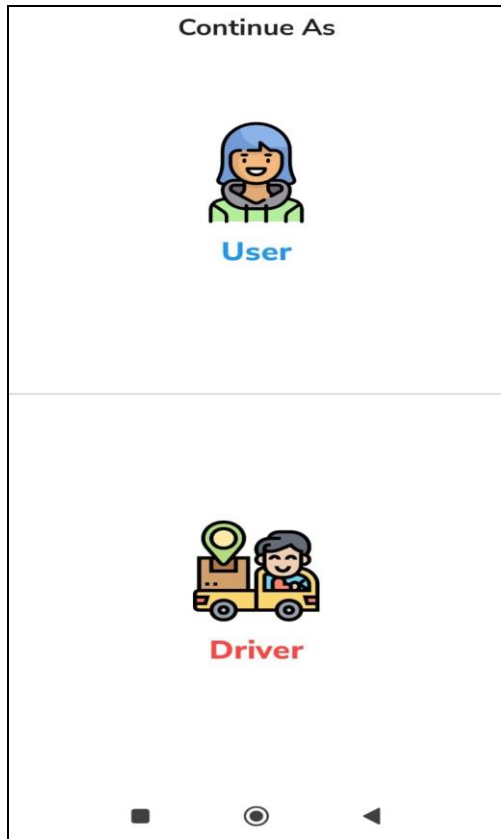
Fig 2 Home Page

Figure 3 represents the login page for the user. The folks can log in or register in the app.If the folks are a new user he click on Sign Up for registering and fill the required details.After that the folks will log in into the application by entering email and password.
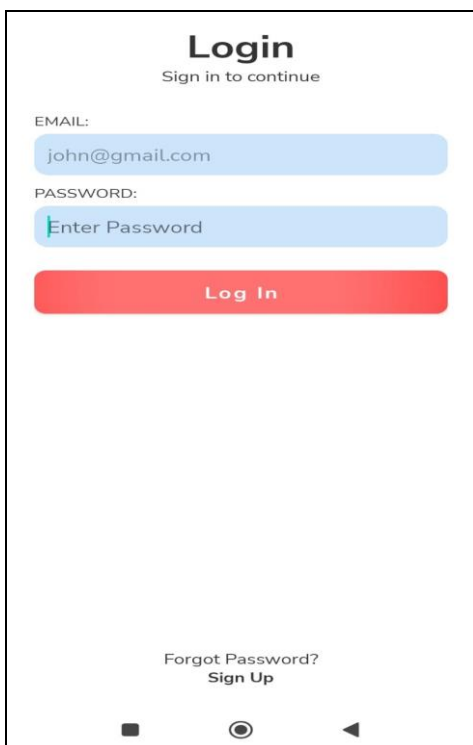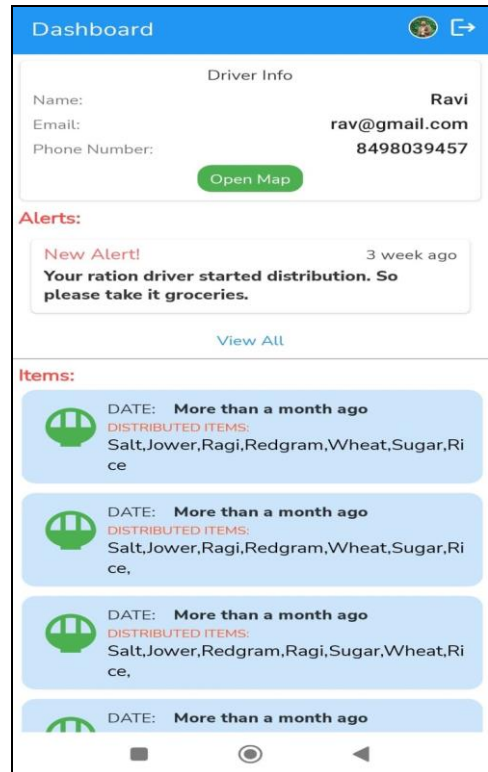
Figure 4 represents the home page of the folks which contain driver information ,item details,location of the driver from the open map button.

Fig 4 User Home Page

Figure 5 represents the login page for the driver.The driver will log in into the application by entering email and password.
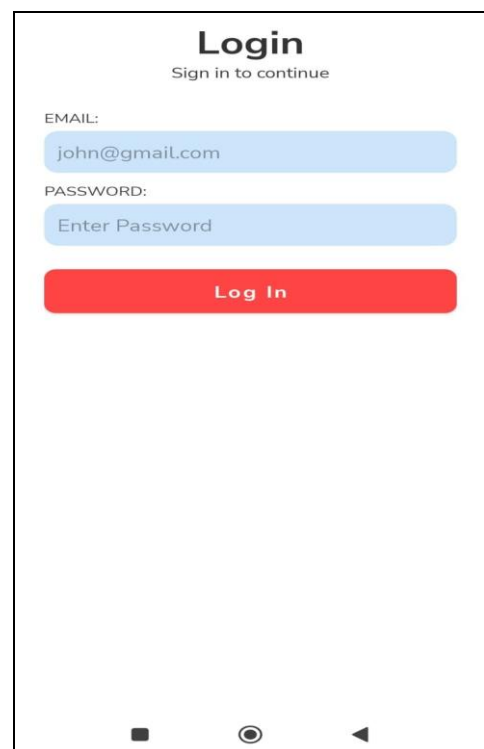

Fig 3 User Login Page

Fig 5 Driver Login Page

Figure 6 represents the accessing of driver location from the location settings of driver phone.
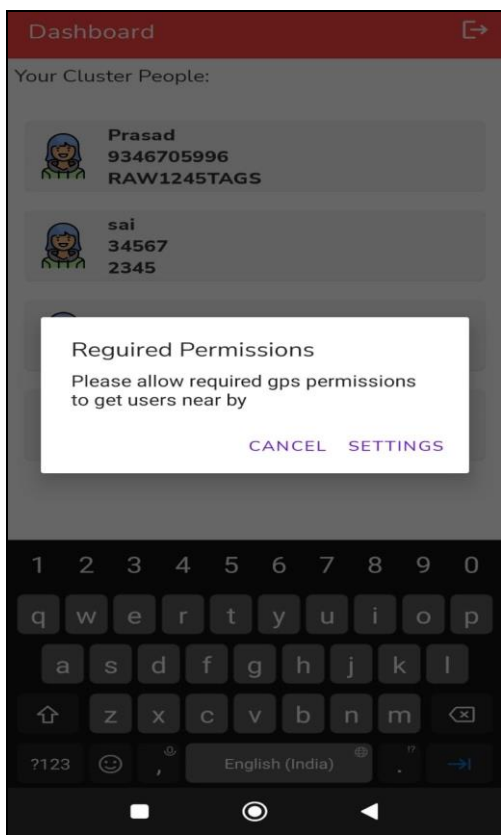

Fig 6 Accessing Driver Location

Figure 7 represents the home page of the driver which contains cluster people informaton from the location enabled.
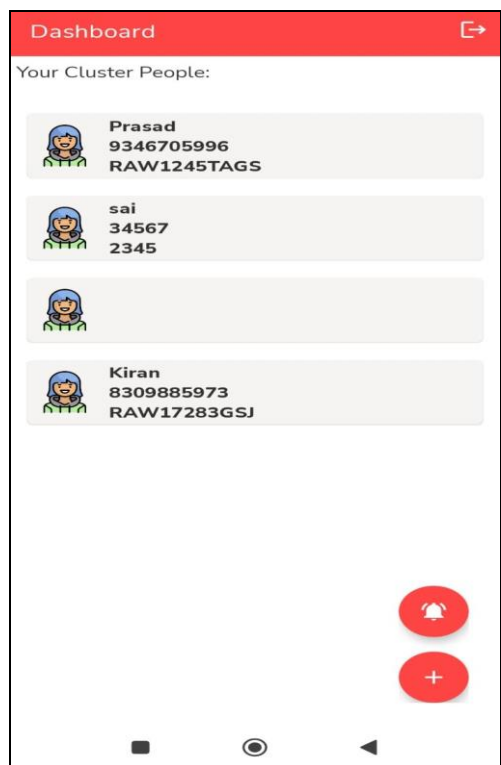

Fig 7 Driver Home Page

Figure 8 represents the adding of item by the driver for the add button on the home page. The data is recovered from the database. We are using Firebase as our data storage application in which all the information is retrieved later.
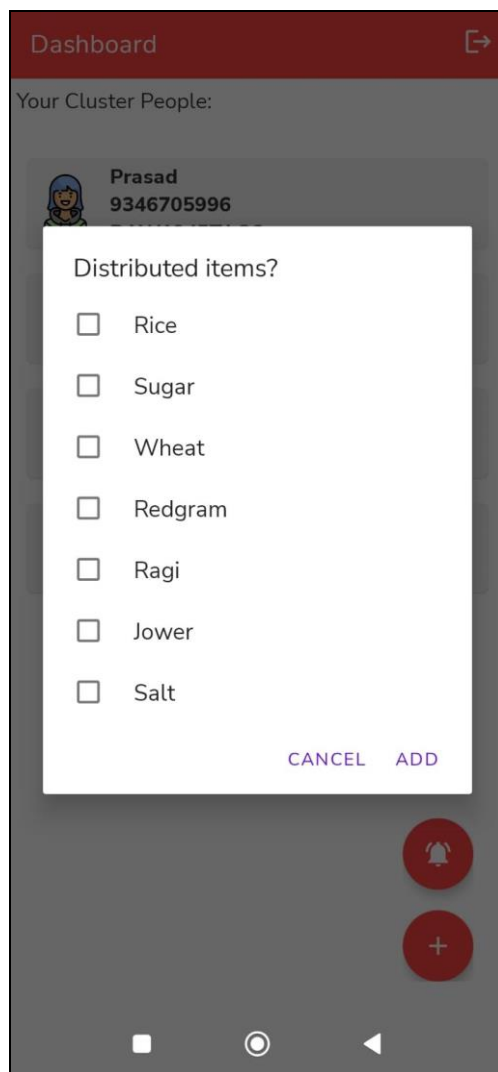

Fig 8 Selecting List of Items

V. CONCLUSION

In conclusion, the development of the "Ration Van Tracking" app has addressed a number of problems faced by users of the door delivery scheme in the State of AP. By using GPS tracking, the app has improved the efficiency and effectiveness of the delivery process, reducing the number of missed or delayed deliveries. In addition, the app has provided users with a convenient and user-friendly way to access information about their deliveries and provide feedback on the delivery scheme. Overall, the "Ration Van Tracking" app has demonstrated the potential for technological solutions to improve the delivery of essential goods and services to the general public. Our Future Work concentrates on enhancing the app's security and adding support for other platforms, such as iOS or Windows, to reach a wider audience.

REFERENCES

[1]. Pedwal, Pranjal, and Shubhangi Borkar. "Real Time Automatic Ration Material Distribution System." *IOSR Journal of Computer Engineering (IOSR-JCE)* (2016): 05-09.

[2]. Kamble, Prachi Vasant, Kranti Manoj Kranti, Kanchan Anant Kedar, and Ankush M. Gund. "Automatic Rationing System".

[3]. Patill, Kritika, et al. "Smart Ration Card System Based on GSM Technique." *International Research Journal of Engineering and Technology (IRJET)* 3.11 (2016).

[4]. Prakash, Bharath Ravi, and Sanket S. Kulkarni. "A Web Based Approach for Navigation Technology using Fused Location API." *2021 IEEE International Conference on Mobile Networks and Wireless Communications (ICMNWC).* IEEE, 2021.

[5]. Ishige, Tomoya, and Jun-ichi Imai. "Peripheral Notification That Does Not Interfere with User's Concentration by Interactive Projection." *2020 Joint 11th International Conference on Soft Computing and Intelligent Systems and 21st International Symposium on Advanced Intelligent Systems (SCIS-ISIS).* IEEE, 2020.

[6]. Alquhali, Abdullah H., et al. "Iot based real-time vehicle tracking system." *2019 IEEE conference on sustainable utilization and development in engineering and technologies (CSUDET).* IEEE, 2019.

[7]. Z. Dai, W. Lyu, Y. Ding and Y. Song, "OPTI: Order Preparation Time Inference for On-demand Delivery," 2021 IEEE 27th International Confer ence on Parallel and Distributed Systems (ICPADS), 2021, pp. 26-33, doi: 10.1109/ICPADS53394.2021.00009.

[8]. A. N J, K. R. N S, R. M. H, A. S. M, C. R and S. Bhat, "Android App and RFID Based Smart Ration Distribution System," 2021 IEEE International Conference on Mobile Networks and Wireless Communications (ICMNWC), 2021, pp. 1-5, doi: 10.1109/ICMNWC52512.2021.9688465.

[9]. N. Anzum, S. F. Afroze and A. Rahman, "Zone-Based Indoor Localization Using Neural Networks: A View from a Real Testbed," 2018 IEEE International Conference on Communications (ICC), 2018, pp. 1-7, doi: 10.1109/ICC.2018.8422182.

[10]. Dhanoj Mohan, Rathikarani, Gopakumar, "Automation of Ration Shop Using PLC" International Journal of Modern Engineering Research, 2013, Vol. 3, Issue. 5, pp. 2971-2977.

[11]. A. N. Madur, Sham Nayse, "Automation in Rationing System Using Arm 7" International journal of innovative research in electrical, electronics, instrumentation and control engineering ,vol.1, Issue 4, Jul 2013.

[12]. J. Zhang, W. Xiao, B. Coifman and J. P. Mills, "Vehicle Tracking and Speed Estimation From Roadside Lidar," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 13, pp. 5597-5608, 2020, doi: 10.1109/JSTARS.2020.3024921.

[13]. Hassaballah, Mahmoud, et al. "Vehicle detection and tracking in adverse weather using a deep learning framework." *IEEE transactions on intelligent transportation systems* 22.7 (2020): 4230-4242.

[14]. Wang, Jianwen, Aimin Li, and Y. Pang. "Improved multi-domain convolutional neural networks method for vehicle tracking." *International Journal on Artificial Intelligence Tools* 29.07n08 (2020): 2040022.

[15]. Ge, Dong-yuan, et al. "Vehicle detection and tracking based on video image processing in intelligent transportation system." *Neural Computing and Applications* 35.3 (2023): 2197-2209.