

# SHOPPING CART ASSISTANT ROBOT USING ROS

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## INTRODUCTION

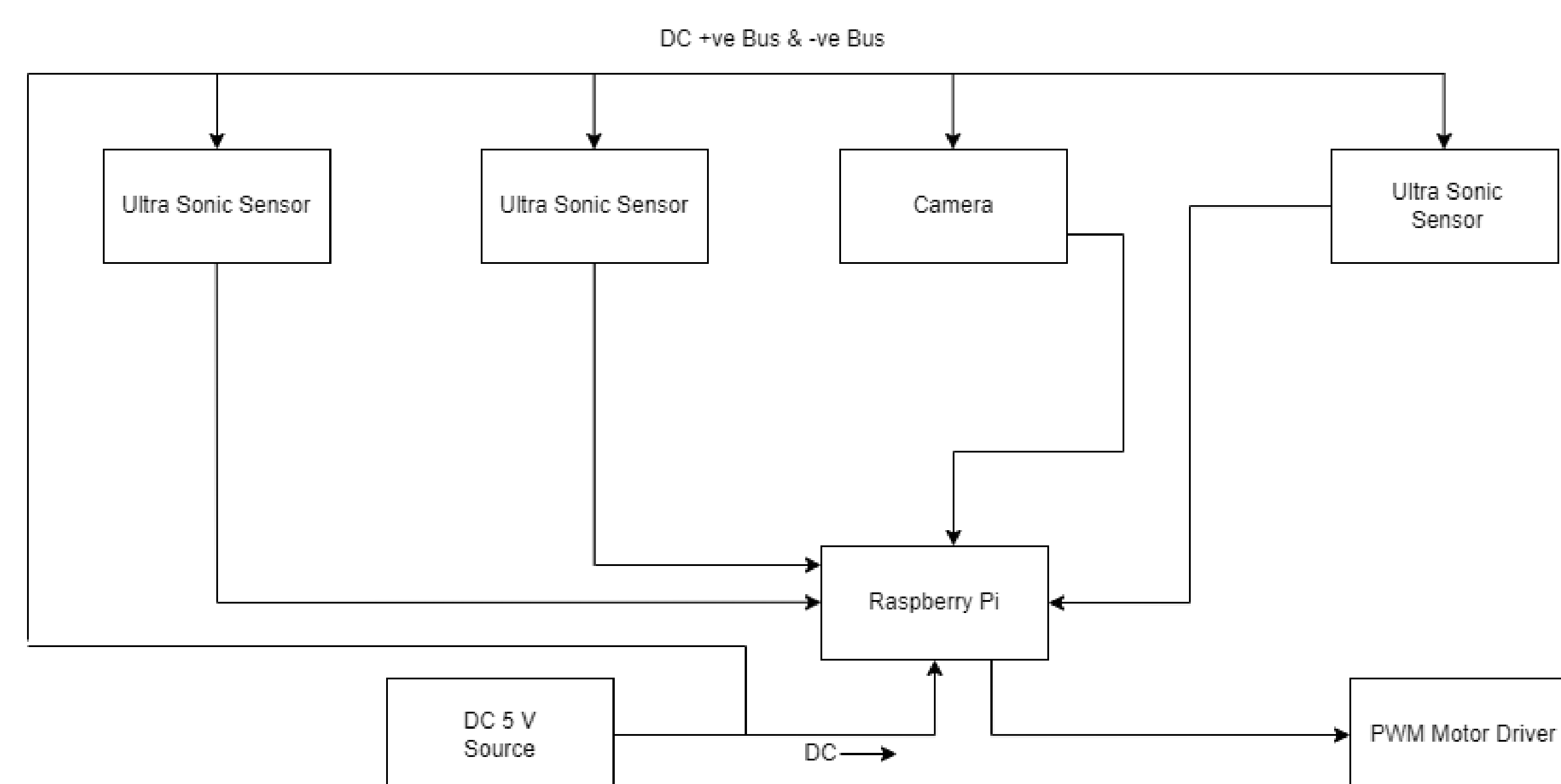
### SHOPPING CART ASSISTANCE ROBOT WITH ARDUINO AND ROS

Our Supermarket Assistance Robot have revolutionized the shopping experience, making it more efficient and convenient for customers. These smart robots integrate advanced technologies like Arduino and ROS (Robot Operating System) to perform various tasks, ranging from guiding customers, carrying shopping baskets. We combine the flexibility of Arduino microcontrollers and the communication capabilities of ROS, creating an intelligent and interactive shopping companion. It represents the future of retail shopping, providing customers with a delightful and efficient shopping experience. By automating various tasks and integrating cutting-edge technologies, this smart robot enhances customer satisfaction, streamlines store operations, and contributes to the overall success of modern supermarkets. As technology advances, we can expect to see even more sophisticated robots transforming the way we shop and interact with stores in the near future. It utilizes array of sensors like Infrared, Ultrasonic, cameras to navigate complex supermarket environments with precision. The Supermarket Assistance Robot can accompany customers throughout their shopping journey, carrying their selected items in a detachable shopping cart.

## PRE REQUISITE

Before implementing a supermarket assistance system using ROS (Robot Operating System), several prerequisites must be met to ensure a successful deployment. Firstly, a robust and reliable hardware platform, comprising sensor-equipped robots, must be available. These robots should possess advanced navigation capabilities, such as LiDAR or camera-based perception systems, to navigate safely through crowded supermarket aisles. Additionally, a well-structured and up-to-date store layout map must be generated for efficient path planning. Secondly, a skilled team of ROS developers and roboticists is essential to design, develop, and maintain the software infrastructure. They should be proficient in ROS programming, machine learning, and computer vision to enable functionalities like product recognition and customer interaction. Finally, comprehensive testing and safety measures should be implemented to ensure the robots can operate seamlessly alongside customers and store personnel, prioritizing user safety and privacy throughout the entire process. Meeting these prerequisites will pave the way for a successful implementation of ROS-based supermarket assistance, revolutionizing the retail experience.

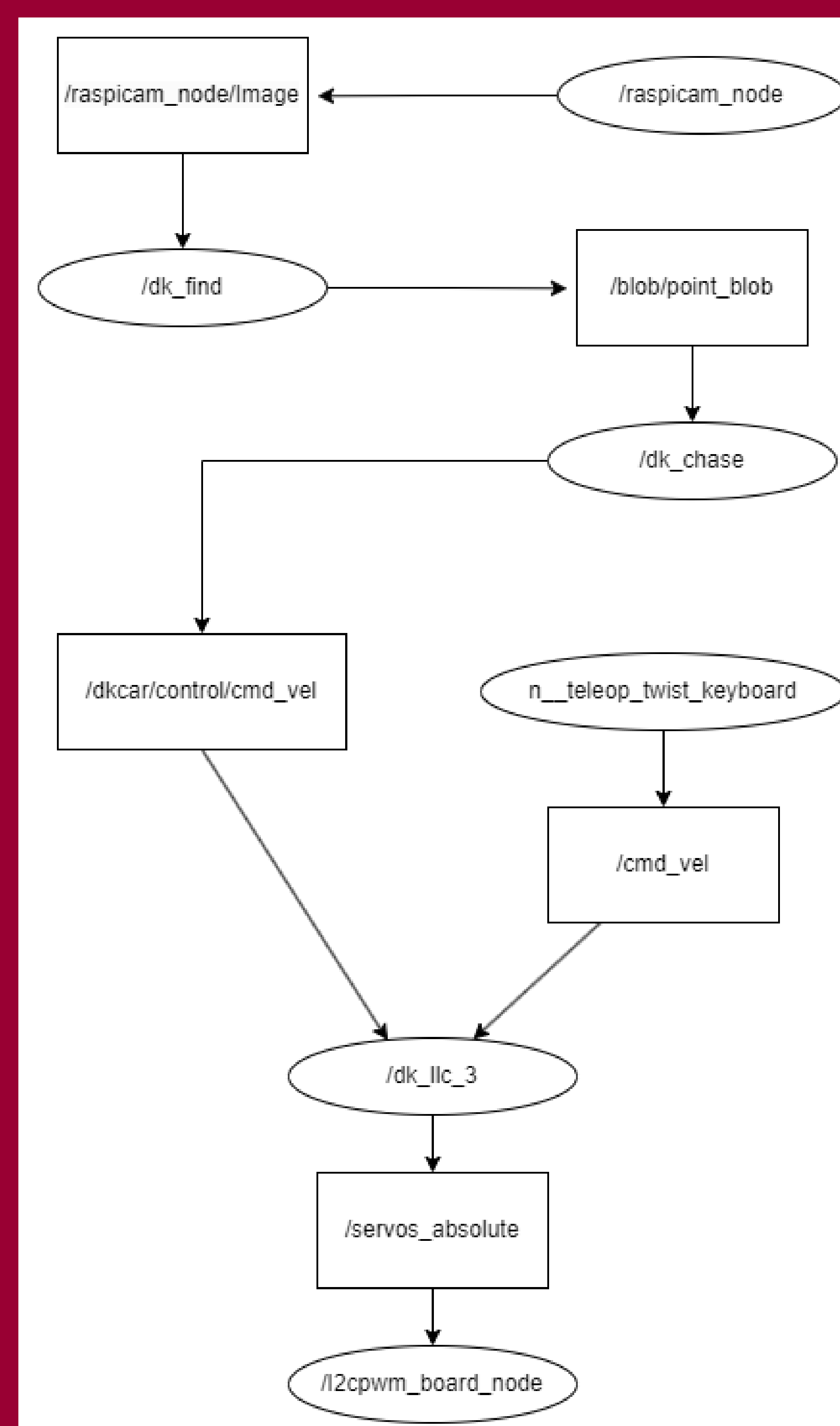
## BLOCK DIAGRAM



## PROJECT OUTLINE

ROS is used in the implementation of our Supermarket Assistance robot. Using OpenCV, we construct a distinctive blob that our robot will recognise with the help of the camera and follow. Additionally, with the use of infrared and ultrasonic sensors, it will find a range, continue to follow us, and assist us as needed. Upon completion, the Supermarket Assistance Robot presents a groundbreaking solution for the retail industry. Its ability to assist customers and offer personalized experiences can revolutionize the shopping experience, leading to increased customer satisfaction and operational efficiency for supermarkets and retail stores. The project's future enhancements and scalability potential open doors for further advancements in robotic technology for the retail sector, offering exciting opportunities for the future of shopping.

## WORKFLOW



## REFERENCES

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## CONCLUSION

In conclusion, the integration of ROS (Robot Operating System) into the realm of supermarket assistance holds tremendous potential to revolutionize the retail experience. By employing sensor-equipped robots and a sophisticated software infrastructure, ROS enables autonomous navigation, object recognition, and human-robot interaction, making shopping more efficient and enjoyable for customers. The system's ability to manage inventory, fulfill orders, and maintain store cleanliness enhances operational efficiency and reduces manual labor. Moreover, the implementation of ROS-powered robots fosters a safer and more secure shopping environment through surveillance capabilities and emergency handling protocols. As the technology continues to evolve and new advancements in AI and robotics emerge, the future of supermarket assistance using ROS is promising, leading to even more sophisticated and personalized customer interactions. Ultimately, the amalgamation of ROS with supermarket assistance signifies a significant step forward in transforming traditional retail spaces into smart and customer-centric establishments, enhancing the overall shopping experience for consumers and retailers alike.