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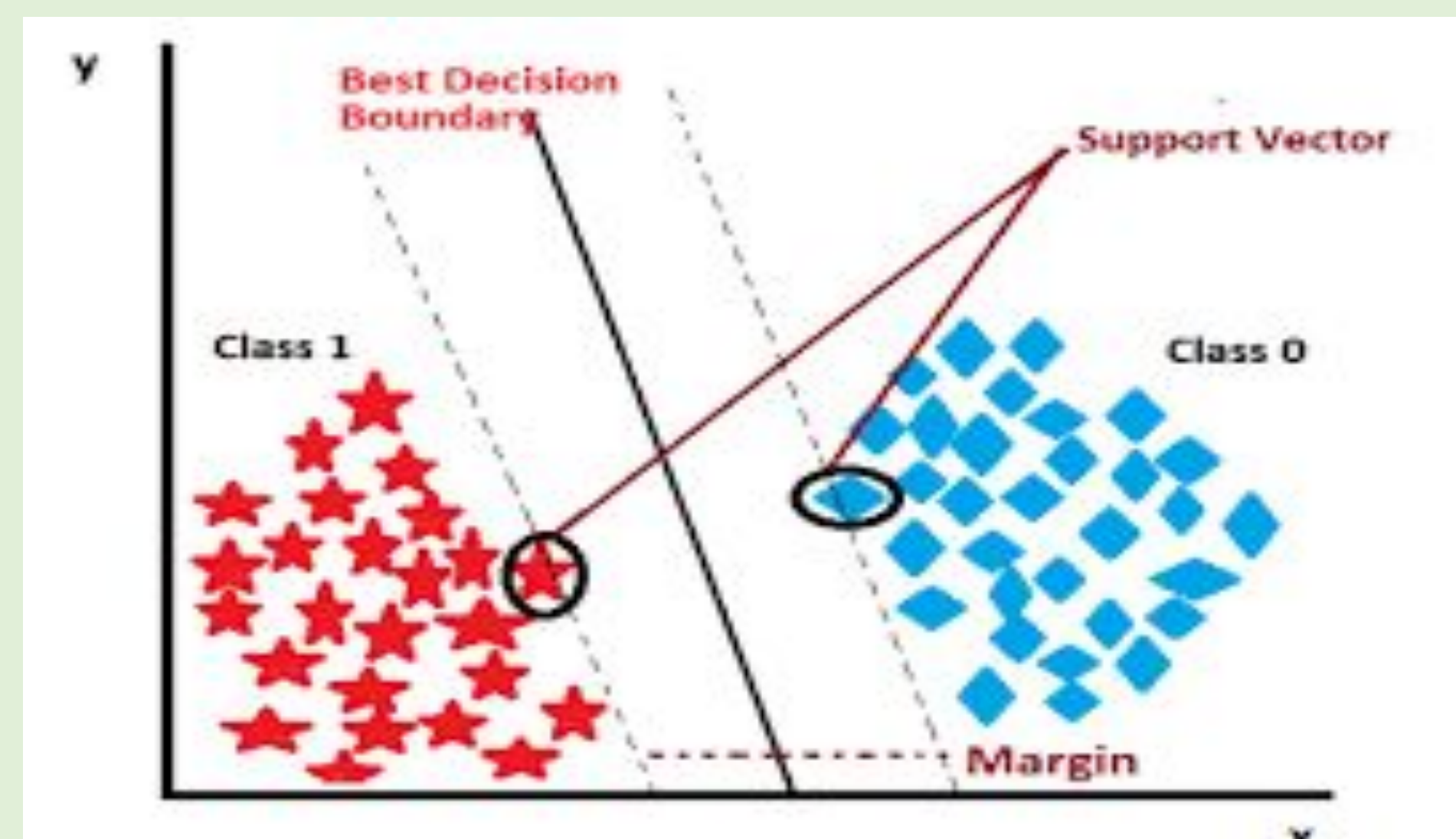
Abstract

This project develops an intuitive hand gesture control system for unmanned vehicles using machine learning and computer vision. Unlike traditional joystick controls, gesture-driven commands offer a user-friendly experience. Key models like CNNs, RNNs, and SVMs will classify gestures from camera feeds. Starting with basic movements (forward, back, right, left, up), the project aims to expand to complex gestures. Feature extraction enhances accuracy, and future work will focus on additional gestures and exploring other algorithms for performance improvements.

Methods

Machine Learning Algorithms such as:

- SUPPORT VECTOR MACHINES(SVM)



- K- NEAREST NEIGHBOUR (KNN)

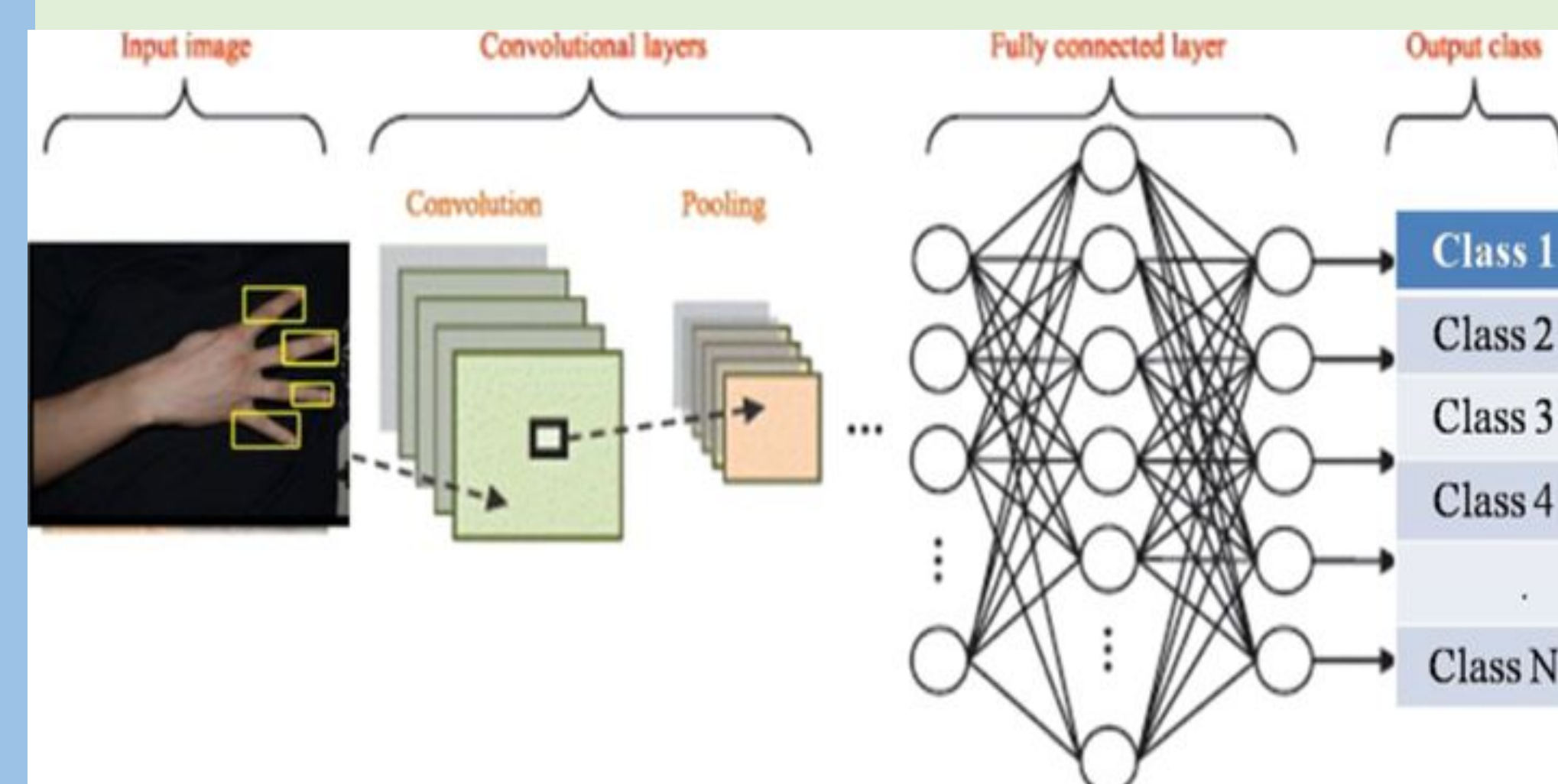
- DECISION TREES

- K-MEANS CLUSTERING

- RECURRENT NEURAL NETWORK(RNN)

- MEDIA PIPE

- CONVOLUTIONAL NEURAL NETWORKS(CNN)



Expected Outcome

<https://colab.research.google.com/drive/1goUORYbkf9Cg3-BHgiEaot4qIG9Axvoa?authuser=0#scrollTo=eYqgXnBTihEJ>



Conclusion

In conclusion, the project demonstrates how hand gesture recognition, combined with machine learning models like CNNs, KNN, and SVM, can effectively control unmanned vehicles with high accuracy. This method simplifies control and improves the operational efficiency of unmanned vehicles, making it ideal for applications requiring quick, intuitive responses.

Future Perspectives

- Refine machine learning algorithms to improve gesture recognition.
- Add more gestures for increased versatility.
- Train and compare hand gesture datasets for classification accuracy.
- Implement hardware and software communication between transmitter and receiver.
- Update the project with real-time signal transmission.

Impact on Society

- **Improves accessibility** with hands-free control.
- **Enhances efficiency** across various fields.
- **Simplifies interactions** with intuitive gestures.
- **Boosts safety** by minimizing physical contact.
- **Increases responsiveness** and user adaptability.

Background

- Introduction to Gesture-Based Control Systems
- Objectives of the Project
- Technological Foundations



- Gesture Classification
- Data and Model Training
- Future Work and Enhancements
- Challenges and Opportunities