Abstract on Automated Behavior and Rule-Breaking Detection System

The cameras we have around us can help us only in recording the moments. And that's where we have failed the most in preventing dangerous things from happening — starting from small fights to terrorist attacks. Our project, **Automated Behaviour and Rule-Breaking Detection System**, can stop these things from happening with the help of Machine Learning integrated with cameras through IoT.

This project helps in encountering core problems like smoking and fighting in public places, rule-breaking, and identification of suspicious people with the help of gait and facial recognition. The most important feature is sending **real-time alerts** upon suspicious activities recorded by cameras. By integrating Machine Learning with our daily security cameras, this system can be a **game changer** in terms of national development — improving security, cleanliness, civic sense, and responsibility.

As Machine Learning is playing a significant role in today's world, it can perform many tasks by choosing the right algorithm. Similarly, we have used a **CNN-RNN Classifier (82% accuracy)** and a **ViViT (Vision Transformer) Classifier (60% accuracy)**. The CNN-RNN model has given the best results compared to other algorithms in its initial testing phase. This project is still under improvement as we continue adding more datasets. We have already implemented **facial recognition, smoking detection, and fighting detection** in the initial phase.

Furthermore, this project can be extended beyond these functionalities. Finally, Machine Learning, with the help of IoT, brings this project to life as we aim to implement it in **real-time surveillance systems**.

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