

PEDESTRIAN DETECTION

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1. THE PROBLEM:

Humans are not optimal because if they are not focused enough they might not notice the pedestrians on the road and this could be a serious hazard and it already has costed many people simple because they did not notice but a computer does not have to worry about how focused it is because no matter what it will always have a 100% focus and will have eyes everywhere even where humans can't see. A self-driving car has no way to distinguish between a pedestrian and other obstacle, so a pedestrian detection algorithm is required for all self-driving cars.

2. WHAT CAUSES THE PROBLEM:

Many things can cause people to not see a pedestrian for example: They could get distracted or they could not be paying attention or many other similar reasons but they can all be avoided by using machines as they do not get tired or distracted like humans do.

3. THE SOLUTION:

We can use AI to create a pedestrian detection algorithm that can detect pedestrian on road and ensure their safety.

4. PROCESS:

On the first day we started by choosing a topic and figured out what we need to make the model. By the second day we had started researching on the topic and gathered up all the information and content we were going to use. Then, we downloaded our dataset and started coding the model, by referencing websites for help, for the next couple of days. We had decided to use CNN as our neural network since it was best for us. A convolutional neural network (CNN) is a type of artificial neural network used in image recognition and processing that is specifically designed to process pixel data.

CNNs are powerful image processing, artificial intelligence (AI) that use deep learning to perform both generative and descriptive tasks, often using machine vision that includes image and video recognition, along with recommender systems and natural language processing (NLP).

A neural network is a system of hardware and/or software patterned after the operation of neurons in the human brain. Traditional neural networks are not ideal for image processing and must be fed images in reduced-resolution pieces. CNN have their “neurons” arranged more like those of the frontal lobe, the area responsible for processing visual stimuli in humans and other animals. The layers of neurons are arranged in such a way as to cover the entire visual field avoiding the piecemeal image processing problem of traditional neural networks.

A CNN uses a system much like a multilayer perceptron that has been designed for reduced processing requirements. The layers of a CNN consist of an input layer, an output layer and a hidden layer that includes multiple convolutional

layers, pooling layers, fully connected layers and normalization layers. The removal of limitations and increase in efficiency for image processing results in a system that is far more effective, simpler to train limited for image processing and natural language processing. After making the code we tested it but faced some setbacks due to some errors and lack of accuracy, we solved the errors and decreased the complexity of the project to improve the accuracy while keep the loss minimal. Lastly, after 2 weeks of hard work we winded up the project.