proposed an image recognition system method based on Convolutional Neural Network (CNN).

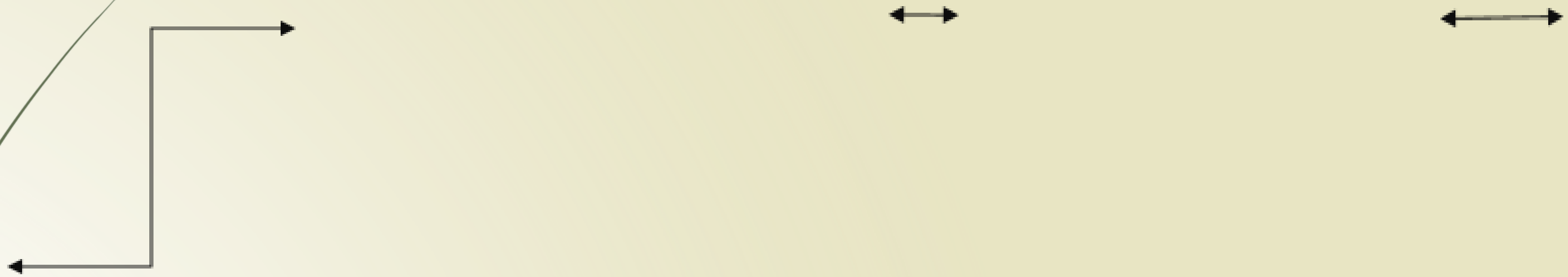
The model initially divide the train and test sets in 80% and 20% and then sent to the pre processing phase , where finally it is trained to classify into two classes fire and non- fire.

It uses ResNet50 with transfer learning to train the model and then they are resized and splitted up into train and test sets.

ReLu function and softmax are used for image classification .

By using the optimal learning rate the proposed model was able to achieve a training set accuracy of 92.7% and est set accuracy of 82.57%.

Image pooling and all the working are taken care by the ResNet50 architectureand classified based one the threshold by softmax int two classes 0(fire) and 1 (no fire).

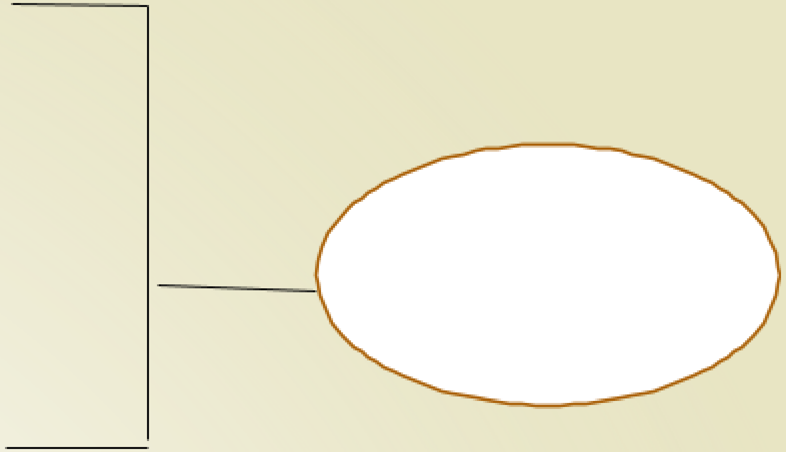


# Camera 1

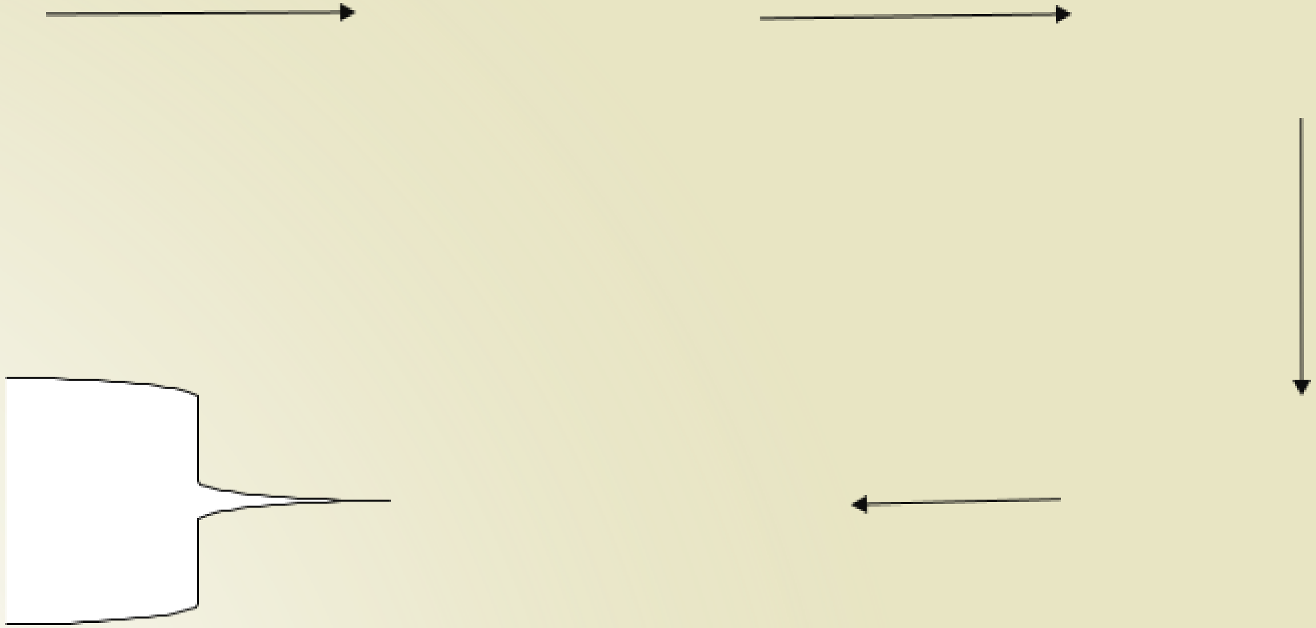
To validate the performance of each pre-trained model he k-fold method is used.

The model obtained during the validation is sent to the Raspberry to test their functionality

For testing in Raspberry the google colab saves the model In old Pytorch's library.



| MATRICES | |
|---|---|
| Accuracy | 99.09 |
| Precision | 100.00 |
| Sensitivity | 98.08 |
| F1-Score | 99.09 |
| Specificity | 98.30 |



# Video E

various ML algorithms on the extracted features to detect fire in video frames.