

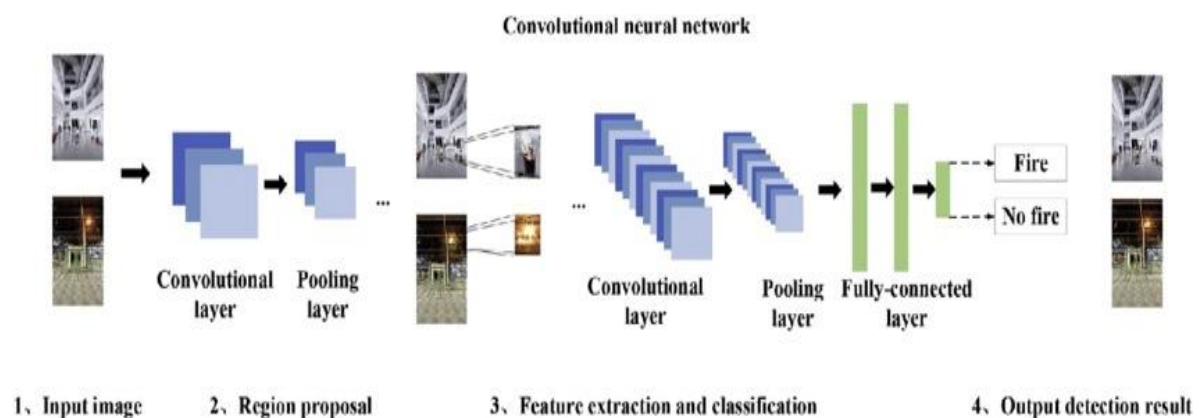
EMERGING METHODS FOR EARLY DETECTION OF FOREST FIRES

OBJECTIVE:

By detecting a fire quickly and accurately (i.e., by not sacrificing speed or causing false alarms) and providing early warning notification, a fire-detection system can limit the emission of toxic products created by combustion, as well as global-warming gases produced by the fire itself.

Fire detection systems increase response times, as they are able to alert the correct people in order to extinguish the fire. This thus reduces the amount of damage to the property. Fire detection systems can be connected to sprinklers that will automatically respond when a fire is detected.

SOLUTION ARCHITECTURE:



- This Solution Architecture involves four stages.
 - 1)Input Image
 - 2)Region Proposal
 - 3)Feature extraction and classification
 - 4)Output detection result
- Step 1: We get the input image and discuss feature maps, learning the parameters of such maps, how patterns are detected, the layers of detection, and how the findings are mapped out.
- Step 2: The second part of this step will involve the Rectified Linear Unit or ReLU. We will cover ReLU layers and explore how linearity functions in the context of Convolutional Neural Networks. Not necessary for understanding CNN's, but there's no harm in a quick lesson to improve your skills.
- Step 3-Pooling: In this part, we'll cover pooling and will get to understand exactly how it generally works. Our nexus here, however, will be a specific type of pooling; max pooling. We'll cover various approaches, though, including mean (or sum) pooling. This part will end with a demonstration made using a visual interactive tool that will definitely sort the whole concept out for you.
- Step 4 -Flattening: This will be a brief breakdown of the flattening process and how we move from

pooled to flattened layers when working with Convolutional Neural Networks.

- Step 5-Full Connection: In this part, everything that we covered throughout the section will be merged together. By learning this, you'll get to envision a fuller picture of how Convolutional Neural Networks operate and how the "neurons" that are finally produced learn the classification of images.

