Emotion and Hand Recognition with CNN

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*Abstract*

This paper is a summary of a study of the CNN network applied to the classification of emotions and the classification of determining if there are hands or no hands in a photo. The question we are asking is, how reliable is the CNN algorithms as it relates to these topics and what can we do within the algorithm to improve accuracy.

Keywords—CNN, emotion, hand, touching, object detection, classification, algorithm

# Introduction

In the paper we will discuss the summation of 2 classifications: Emotion detection and hands, no hands, and touching detection within images using the CNN algorithm. The algorithm. The Convolutional Neural Networks (CNN) is an algorithm that can take an image as an input and dissect it into smaller more manageable pieces images and data to compare and differentiate against other images. In doing this it forms patterns that it will compare to determine with any level of accuracy if the original image contains similarities with other images in the model. The question that we are asking is how well does CNN perform and what parameters and layers can we use to help improve this performance.

# Convolutional Neural Networks (CNN)

## Summary

Convolutional Neural Networks (CNN) are an algorithm based on the human brain inspired by the organization of the Visual Cortex. An image is broken down into a matrix of information and pixel values. As you can imagine, this process will produce a lot of data; therefore the larger the images and the amount of images will become computationally intensive. CNN’s have several standard layers, though the methods to process the layers may vary: Input, Convolution Layer, Max Pooling, Fully Connected layer, Output.

## Input

## Convolution Layer

## Max Pooling

## Fully Connected

## Output

# Emotions Classification

# Hands-Touch Classification

##### References

For this analysis we analized code provided by our professor Dr JoonYoon Kim as well as several Kaggle references. Ultimately, we combined several ideas to form our finished resources for this project.

1. ??
2. J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.