

Public Abstract

First Name: Muhind

Middle Name: Salim

Last Name: Alradad

Adviser's First Name: Xu

Adviser's Last Name: Han

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term: SP 2015

Department: Electrical and Computer Engineering

Degree: MS

Title: ROBUST CLASSIFICATION WITH CONVOLUTIONAL NEURAL NETWORKS

For image classification, I achieved the current state-of-the-art performance by using methods based on Convolutional Neural Networks (CNNs). Face image analysis requires both effective feature extraction and classifier systems. This research considers the deep learning algorithm and addresses its working for classification tasks. I shows how to choose between averages and max pooling in CNN architecture. This method improved results by using homogeneous networks that combined average and max pooling together. For gender classification based on facial features, CNNs proved effective for simultaneously extracting relevant features and classifying them. State-of-the-art performance was obtained on two unconstrained datasets: Labeled Faces in the Wild (LFW) and Images of Groups of people dataset. CAS-PEAL-RL dataset was used to test our systems under constrained conditions where all the images were collected inside the lab. For age estimation, I achieved good performance using images of groups of people dataset where the people in the images have been divided into seven groups according to their age.