

SEMINAR ABSTRACT

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Pose Estimation using Deep Learning

Introduction

Human pose estimation is an important research topic in the field of computer vision. In the past years, the vision of computers has been able to achieve massive momentum that could provide the absolute best of expectations among the many fields and sectors. In this seminar I'm trying to implement mediapipe pose detection to detect the human body pose, make a model with simple Dense network using keras and train the model on the data. After that do the prediction.

This technique which has been chosen has an amazing advantage of reasoning about pose in a comprehensive manner and has a straightforward but yet efficacious conceptualization which takes advantage of the recent advances in the Computer Vision Sector.

The Kinematic model- The kinematic model uses a set of joint positions and the limb orientations to represent the human body structure. The pictorial structure model is a widely used graph model, which is also known as the tree-structured model.

Mediapipe- Mediapipe offers cross-platform, customizable ML solutions for live and streaming media.

TensorFlow- TensorFlow is an end-to-end open-source platform for machine learning. TensorFlow is a rich system for managing all aspects of a machine learning system; however, this class focuses on using a particular TensorFlow API to develop and train machine learning models.

Keras- Keras is an open-source high-level neural network library, which is written in Python and is capable enough to run on TensorFlow etc.

Deep Neural Networks - Deep Learning is the branch of Machine Learning based on Deep Neural Networks (DNNs), meaning neural networks with at the very least 3 or 4 layers (including the input and output layers). But for some people (especially non-technical), any neural net qualifies as Deep Learning, regardless of its depth. And others consider a 10-layer neural net as shallow.

Convolutional Neural Network- A Convolutional Neural Network (ConvNet/CNN) is a Deep Learning algorithm that can take in an input image, assign importance (learnable weights and biases) to various aspects/objects in the image, and be able to differentiate one from the other.

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