

pre-trained Inception-v3 model using:

ImageNet 2012 Challenge training dataset:

<https://www.image-net.org/challenges/LSVRC/2012/>

Inception-v3 model:

<https://keras.io/api/applications/inceptionv3/>

<https://medium.com/analytics-vidhya/transfer-learning-using-inception-v3-for-image-classification-86700411251b>

<https://www.youtube.com/watch?v=ybVV7iu8jis>

good with jupyter if small dataset large data set not tested yet

transfer learning with dataset:

Labeled Faces in the Wild (LFW)

<https://vis-www.cs.umass.edu/lfw/#download>

Reinforcement Learning (Q-learning):

After feature extraction by Inception-v3, **Q-learning** (a reinforcement learning algorithm) is applied. The reinforcement learning step is used to fine-tune the model's performance by adjusting parameters based on the rewards system. The **Q-learning** approach helps improve recognition precision by learning optimal actions (parameter adjustments) that maximize the system's performance in challenging situations (e.g., variations in lighting).

to fine-tune the model's performance by adjusting parameters based on the rewards system

Phase

Transfer Learning with Inception-v3:

The Inception-v3 model, pre-trained on the ImageNet dataset, is first used to perform transfer learning on the Labeled Faces in the Wild (LFW) dataset.

Transfer learning allows the model to utilize the knowledge it gained from training on the large ImageNet dataset and apply it to the new task of face recognition on the LFW dataset. This helps the model extract facial features efficiently without needing to start the learning process from scratch.

Reinforcement Learning (Q-learning) Optimization:

After the Inception-v3 model extracts facial features and makes initial classifications, the process moves to the Reinforcement Learning (Q-learning) phase.

Q-learning is then applied to fine-tune the model and optimize its performance. Specifically, Q-learning helps the model adjust its parameters by learning from actions (e.g., improving the weight updates) to maximize the accuracy of face recognition, especially under challenging conditions such as varying lighting or facial poses.

This optimization phase improves the model's accuracy by addressing cases where the initial feature extraction may not be sufficient due to environmental factors or image quality.

Similar work:

Deep reinforcement learning for robust emotional classification in facial expression recognition

<https://www.sciencedirect.com/science/article/abs/pii/S0950705120304081>