

Mutiple Medical Landmark Detection on X-Ray Scan Using Reinforcement Learning

Authors : Vijaya Yuvaram Singh V M, Kameshwar Rao J V

Abstract : The challenge with development of neural network based methods for medical is the availability of data. Anatomical landmark detection in the medical domain is a process to find points on the x-ray scan report of the patient. Most of the time this task is done manually by trained professionals as it requires precision and domain knowledge. Traditionally object detection based methods are used for landmark detection. Here, we utilize reinforcement learning and query based method to train a single agent capable of detecting multiple landmarks. A deep Q network agent is trained to detect single and multiple landmarks present on hip and shoulder from x-ray scan of a patient. Here a single agent is trained to find multiple landmark making it superior to having individual agents per landmark. For the initial study, five images of different patients are used as the environment and tested the agents performance on two unseen images.

Keywords : reinforcement learning, medical landmark detection, multi target detection, deep neural network

Conference Title : ICRLCT 2020 : International Conference on Reinforcement Learning and Control Technologies

Conference Location : Dubai, United Arab Emirates

Conference Dates : November 09-10, 2020