X-Ray Image Classification Methods using Artificial Intelligence Techniques

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Abstract
This paper aims at providing a possible solution to the problem posed by the lack of automation in classifying X-Ray images taken in hospitals. Daily, all over the world, a tremendous number of digital X-Ray images are taken. Currently, there is a need for specialized medical staff to classify various such images. This process takes time, and some situations need immediate intervention, making it crucial that this procedure takes as little as possible. Besides the need for a prompt intervention, the accuracy of the diagnosis is paramount. Several hospital X-Ray datasets pose a major problem, consisting of inaccurately populated datasets. This happens when a patient has multiple scans scheduled in the same day, each focusing on a different body area. In numerous cases, they are classified as a single entry, resulting in datasets being populated with images of wrong body parts or containing several empty files. A tremendous amount of time and effort would be needed to get the datasets to a usable state for high-level studies, with specialized staff having to reorganize them manually. For this exact reason, the introduction of such a classification algorithm could possibly create a major breakthrough in the domain of medical imaging with the use of artificial intelligence and machine learning in the medical field.

Keywords: X-Ray body part classification; Machine learning; Neural networks; Medical imaging