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Abstract

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**Cervical fracture-detection Using CNN Approach**

In a human's neck there are seven bones known as cervical vertebrae,they are listed as C1(Atlas/top bone)-C7(bottom bone). These bones are supporting and connected to your vertebral column , also referred to as your spine. The potential risk of paralysis or fatality rises if there is severe damage from the vertebral column that leads to damage of the cervical spinal cord and impair the central nervous systems connection between the brain and body. Older adults seem to have a high risk of fractures and are more likely prone to death from a cervical fracture.

As a researcher my focus is to identify fractures using CT scans of the cervical spine at both the level of a single vertebrae and the entire patient. The aim of my study is employing Convolutional Neural Networks (CNNs) to predict the risk of cervical vertebra-related conditions from CT scans. These networks are efficient at image analysis , making them ideal for this task after programming them to independently learn and identify intricate patterns and features with visual data from the CT. With the development of my convolutional neural network (CNN) model will achieve impressive high results of validation and test accuracy.

The AI model will help detect anomalies in bone structure, signs of degeneration, or other pathologies that contribute to increased risk of cervical spine conditions will be excelled with the use of CNNs processing the complex details of CT images. This is a crucial part for research because detecting and determining the location of any vertebral fractures is essential to prevent neurologic deterioration and paralysis after any trauma.