

Enabling Non-invasive Diagnosis of Thyroid Nodules with High Specificity and Sensitivity

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Abstract : Thyroid nodules can often be diagnosed with ultrasound imaging, although differentiating between benign and malignant nodules can be challenging for medical professionals. This work suggests a novel approach to increase the precision of thyroid nodule identification by combining machine learning and deep learning. The new approach first extracts information from the ultrasound pictures using a deep learning method known as a convolutional autoencoder. A support vector machine, a type of machine learning model, is then trained using these features. With an accuracy of 92.52%, the support vector machine can differentiate between benign and malignant nodules. This innovative technique may decrease the need for pointless biopsies and increase the accuracy of thyroid nodule detection.

Keywords : thyroid tumor diagnosis, ultrasound images, deep learning, machine learning, convolutional auto-encoder, support vector machine

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