

WEB-BASED DIAGNOSTIC PERFORMANCE COMPARISON OF MOBILE PHONE AND COMPUTER THROUGH CNN IN DIAGNOSING THYROID NODULE ON ULTRASONOGRAPHY

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ABSTRACT

Thyroid nodule is a common disease and according to static from the National Cancer Information Center, it occurred at 26,1760 per 100,000 Koreans as of 2017. With recently advances in computers, Convolution Neural Network(CNN) is great help in diagnosing thyroid nodules. This study develop an algorithm to diagnose malignant thyroid nodule using CNN's transfer learning technology. To train ultrasound images of thyroid nodules with CNN, 13,560 thyroid images collected at Severance Hospital from 2004 to 2019 were used. In order to make the CNN algorithm user-friendly, a web application is created by building a medical server. This study was conducted on confirmed on among 259 patients who were confirmed through Fine Needle Aspiration(FNA) from December 2019 to October 2020 at Severance Hospital. As a result, the AUC values are respectively 0.896 and 0.875 when using PC and mobile. This AUC values similar to those of experienced radiologists. Therefore, It can be fully referenced as secondary information. Moreover, The web application can be easily accessed internet environment. Users could use this web application in internet environment.

REFERENCES

1. Koh, Jieun, et al. "Diagnosis of thyroid nodules on ultrasonography by a deep convolutional neural network." *Scientific reports* 10.1 (2020): 1-9.