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# AI Can Detect Early Signs of Osteoarthritis from an X-ray Image

A team of researchers from the university of Jyväskylä and the Central Finland Health Care District developed an AI based neural network, that can detect early knee osteoarthritis from x-ray images.

This new method offers the potential to improve early detection, saving the patient from unnecessary examinations and treatments.

Typically, tibial spiking is not included in the diagnostic criteria, but orthopaedic specialists consider it as an early sign of osteoarthritis. The AI model will detect whether there is spiking on the tibial tubercles in the knee joint, which will indicate whether osteoarthrosis is present.

Whilst previous AI models were developed to detect knee osteoarthritis, including the severe cases, they have been more focused on later-stage diagnoses, and have not been accurate enough to detect early signs of knee osteoarthritis. However, the new method will fill in the gap by supporting early detection from x-rays.

Anri Patron, the researcher responsible for the development of the method, described the process explaining that, “Around 700 x-ray images were used in developing the AI model, after which the model was validated with around 200 x-ray images. The model managed to make an estimate of the spiking that was congruent with a doctors’ estimate in 87% of the cases, which is a promising result”.

It is hoped that this model will make it possible for general practitioners to make an initial diagnosis from x-rays. This would provide medical benefits for patients, giving them the chance to receive earlier treatment and stop the progression of the disease.

Juha Paloneva, professor of surgery, says, “In the best possible scenario, the patient might even avoid joint replacement surgery”.

Source:University of Jyväskylä

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