

Internship Orthopaedic Research Lab – Department of Orthopaedics

What is the difference in bone density pattern between a healthy bone and a bone with a metastatic lesion?

At the Orthopaedic Research Laboratory (ORL) we are analyzing the fracture risk of patients who have metastasized cancer. If the metastatic lesion is large, the bone may fracture (see the figure 2). To diagnose a metastatic bone (see figure 1) from a healthy bone, a radiologist or radiotherapist has to analyze the X-ray or a CT scan and estimate the severity of the metastatic lesion. We believe it should be possible to quantify the density change by comparing the density distribution from healthy bones to metastatic bones. In that way we help clinicians to quantify the location, size and severity of the metastatic lesion.

In this project we will use a library of CT scans containing healthy and metastasized bones. The assignment is to write a matlab-code that reads in the densities of the bones and enables identification of the metastatic bones. At the ORL we have much experience with matlab and there will be a daily supervisor to help the student to develop the program. The target will be to identify the lesions automatically; the actual fracture risk prediction is the topic of a PhD thesis currently being performed at the ORL.



Figure 1: metastatic lesion in the femur



Figure 2: bone fracture due to a large metastatic lesion

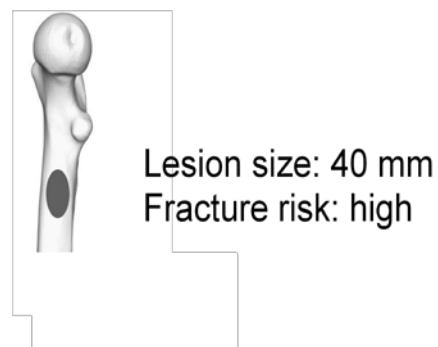


Figure 3: Output of the required software

Key words: *image analysis, matlab, CT scan, diagnostic tool*

Interested? Contact us!

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