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CLASSIFICATION OF TISSUES IN COMPUTED TOMOGRAPHY USING DECISION TREES

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LEARNING OBJECTIVES

1. Understand how to extract texture features from images 2. Understand how to use these texture features to create tissue classifiers

ABSTRACT

This project will demonstrate how to extract texture information from medical images and use that information to classify tissues in computed tomography images. We divided a dataset of regions of interest into a training set and a testing set. Our approach consisted of two steps: texture extraction and classifier creation. In the first step, a set of texture descriptors were calculated for each region of interest in the training set. We use two different texture models: the co-occurrence matrix model and the run-length encoding model. In the second step, a decision tree classifier is built using the 21 texture descriptors calculated in the previous stage and the names of the tissues as class labels. From the decision tree, a set of the most important decision rules is generated to be used for classification of the tissues. The system to be demonstrated will allow the user to interact with the classifier in a number of sample images.