UNIVERSITY OF SOUTH FLORIDA

Defense of a Master's Thesis

Change Descriptors For Determining Nodule Malignancy in Lung CT Screening Images

by

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For the MSCS degree in Computer Science & Engineering

Computed tomography (CT) imagery is an important weapon in the fight against lung cancer; various forms of lung cancer are routinely diagnosed from CT imagery. The growth of the suspect nodule is known to be a prognostic factor in the diagnosis of pulmonary cancer, but the change in other aspects of the nodule, such as its aspect ratio, density, speculation, or other features usable for machine learning, may also provide prognostic information. We hypothesized that adding combined feature information from multiple CT image sets separated in time could provide a more accurate determination of nodule malignancy. The highest accuracy achieved was 83.71% on a subset of features chosen by a combination of manual feature stability testing and the Correlation-based Feature Selection algorithm and classified by the Random Forests algorithm. The highest accuracy achieved with individual CT images was 81.00%, on a feature set consisting solely of the volume of the nodule in cubic centimeters.

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THE PUBLIC IS INVITED

Examining Committee

Lawrence Hall, Ph.D., Major Professor
Dmitry Goldgof, Ph.D.
Sudeep Sarkar, Ph.D.

Robert Bishop, Ph.D.
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