MEng Design Project Announcement – 2019-20 AY

Project title: Lung Health computer analysis from 3D CT images

Brief Description of Design Project Goals:

Overview:
Lung cancer screening using low-dose CT images of the chest has been approved for millions of at-risk patients in the USA. Lung cancer is manifest as small mases of abnormal tissue in the lungs that are called pulmonary nodules.

Specific MEng Contribution:
There are three basic tasks to be studied in this project: (a) the automated detection of pulmonary nodules in CT scans, (b) the characterization of nodules to determine if they are malignant (cancer) or benign, and (c) the automated location of nodules in a new scan that correspond to nodules detected in a previous scan. Initial methods for all of these tasks using computer methods including deep learning methods have been reported in the literature. The student tasks for this project are (a) to review all existing literature for these tasks, (b) to review and acquire any public image datasets that have been made available to evaluate computer methods (c) to implement alternative methods for these tasks and to compare the performance with locally developed methods and local datasets.

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Project Web Site: www.via.cornell.edu/students/

Number of MEng Students Needed: 3

Required Skills:
Experience in computer vision and computer vision programming tools for Linux, C, and python. It is required to take ECE 5470 Computer Vision in the Fall semester to gain these skills if the student has not already taken this course.

Estimated Project Time Frame:

2019-20 Academic Year, Two (2) Semesters