Mission
As part of Research Experience for Educators (RET) the primary mission of the project is to expose Advanced Placement Biology high school students to the field of computer vision by providing them with a learning experience that both advances their knowledge in a specific biological topic while simultaneously integrating concepts and tools typically encountered in the field of computer vision.

Background
There are three main types of lung cancer. Non-small cell lung cancer is the most common type and 86% of lung cancer cases are categorized as non-small cell lung cancer. 15-16% of cases are categorized as small cell lung cancer also known as oat cell cancer tends to spread quickly. Less than 5% of cases are categorized as lung carcinoid tumors also known as lung neuroendocrine tumors. These tumors typically grow slowly and rarely spread. According to the National Cancer Institute, lung and bronchus, colorectal pancreatic, and breast cancers are responsible for nearly 50% of all deaths as well as all new cases (fig1). In 2018, roughly 1.7 million people will be diagnosed with cancer in the United States. Lung and bronchus cancer is the second most common cancer diagnosis with an estimated 234,030 new cases (fig2). After a patient has been diagnosed with lung cancer the cancer is staged from 0-4. Current testing methods for lung cancer include imaging tests such as x-rays or low-dose spiral computed tomographic scans (LDCT), positron emission tomography (PET) scans, magnetic resonance imaging(MRI). An x-ray can detect a nodule as small as 10-20mm versus a LDCT scan that can detect a nodule as small as 6mm. Other methods of detecting lung cancer include sputum cytology (detected in sputum from coughing), tissue sample (biopsy). In recent years LDCT scans has become an effective method in early detection of cancer (CAD) systems aid in early identification of potentially life threatening lung cancer nodules.

References

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