Using Fluorescent Imaging To Make Cancer Detection More Accurate

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Doctors utilize tests such as fluorescent imaging to detect cancer. However, given the high costs of up to $250 per target fluorescent probe, testing for different types of cancers can be unreasonable for many patients. However, if these methods were made more cost-effective, cancer detection would become quicker and more accurate, allowing for early diagnostic procedures to take place which would increase survival rates. The goal of the project was to create a program that, given fluorescent imaging data, can differentiate what cancer a patient has. The code mainly uses the Python library OpenCV on Jupyter Notebook. The program takes an image as an input and calculates the percent stain on the given image. The percent is then inputted into a logarithmic function of best fit which outputs a value on the fluorescence imaging scale from 1-50. Using fluorescent imaging data, this number can be used to identify the specific cancer type, such as H82 lung cancer. The data had a high R2 value of 0.7205 meaning 72.05% of variation can be accounted for by the function, making it highly accurate. Errors in the program could arise from the color detection software. The program detects intensity of green but this may not be as efficient with images with small patches of green as the code wouldn't detect these patches as accurately. This could be solved with higher quality images inputted into the program as the higher quality would allow for iteration between pixels to return more accurate results.