# Detecting Abnormal Cells Using Artificial Intelligence

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Diseases that cause abnormal cells affect millions of individuals. These irregularly shaped cells can be detected visually through a blood smear. A way to automate the detection of abnormal cells using artificial intelligence is necessary as it removes the work for scientists to identify cells and it can lead to more precise results. This system would not require the need for a scientist to analyze the blood smear, so it could be implemented inexpensively in rural places where access to sophisticated medical facilities is limited. For the purposes of this project, sickle cells were used as the abnormal cell. To reach the goal, an application was written in Java to identify sickle cells in images of blood smears using various image-processing algorithms. The application uses a given set of data consisting of the area and circumference of various cell types to generate an algorithm to distinguish sickle cells from healthy cells. The application then analyzes a given blood smear image and processes the detected cells with its own algorithm. It outputs colored rectangular box placed around cells, identifying whether they are healthy red blood cells or sickle cells. The project was concluded developing an application that uses artificial intelligence to develop its own algorithm to distinguish sickle cells from healthy cells. It's planned to expand on this concept by enhancing the program to interface directly with microscopes and detect other diseases. The ultimate goal is to implement this application in places where resources for diagnosing abnormal cell diseases are limited.

**Awards Won:**

Oracle Academy: Award of $5,000 for outstanding project in the systems software category.