Assignment 4 – Pokemon Analysis

For this assignment, I relied heavily on connected component labeling and template matching to decipher text. This took care of identifying HP, CP, ID, and stardust. For the big semicircle and level location, I relied on Hough Circle Transform to detect them. There is some preprocessing before all of these steps to reduce the search space, such as cropping a patch from the original image where the objects of interest are likely to be and removing values of the wrong colors. The cropping part was driven by manual tuning and validation through my own sight. My template matching was extremely simple. All I did is use a few samples of characters as binary images and subtract them from the binary images created from putting a bounding box around the labeled connected components. When finding HP, I knew that three important characters to find are ‘H’, ‘P’, and ‘/’. My goal was to find these three characters occurring on similar rows of the image. Afterwards, I discarded all connected components matched with non-digit characters. Then, I only kept the ones to the right of the slash, since we are supposed to be finding max HP rather than current HP. The CP values were found with similar heuristics to HP, focusing on locating ‘C’ and ‘P’ characters on similar rows and then only examining close digits to the right. Stardust is an interesting story because the correct value is often surrounded by false positive text. To get around this, I realized that stardust values will always have at least two zeros. Once I find these zeros, I just look for nearby digits on the same row.