# Music Sheet Reader

## **Steps:**

### Removing Staff Lines (RemoveStaves):

The first step was to remove the sheet’s staff lines (a.k.a. staves). We firstly converted the sheet into a binary image. We detected the staff lines by making a projection for the foreground pixels and searching for peaks in the projection. This function returns the real start coordinates of the sheet, real end coordinates, staff line positions in each section, number of sections per block, and a new image with staff lines removed.

### Segmenting Notes (Segment):

We firstly used connected components to segment every component found in the resulting sheet. We, then, used the information from RemoveStaves to segment every block, section (a block can have multiple sections), and symbol.

### Classifying Symbols (Classify):

The next step is classify each symbol extracted from Segment.

We trained an SVM with a homebrewed dataset to identify each symbol (as whole note, full note, time signature, …etc.).

### Playing Notes (PlaySong):

Using information from Classify, we play the whole song block by block, by generating sounds depending on the height (frequency) and shape (duration) of each note, and the time separating them (bars).

## **Manually Implemented Steps:**

* Removing Staff Lines
* Segmenting Notes
* Classifying Symbols
* Play Song