

## Computer Vision Final Project Progress Check

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### Progress:

So far our approach was to first find each note's position. To do this we threshold the image and then used morphology with 1xn and nx1 kernel to find the horizontal and vertical lines in the sheet music. With only horizontal and vertical lines left in the image, we used connected contours to find the bars. We then used the horizontal lines as a bounding box and searched for connected contours within it to find the position of only notes. To find the specific note pitch we used the horizontal lines found earlier and determined what line is the note touching in each staff using the x-y position of the bulb of each note. We then found the x-y position of the bulb rather than the note by subtracting the vertical and horizontal line images from the original image, blurring the image, and then searched for connected components inside the staff bounding box.

### Results:

So far, we can find the x-y positions of each note, but not the left to right order of the notes or what note it is. Here are some examples of sheet music where only the notes are numbered showing we have found the x-y positions of each note.

**The Cat Came Back**  
Harry S. Miller 1899

Swing

24 1 34 35 36 29 30 31 25 37 26 27 32 8 33 38 39 40 41

Old Ma-ter Johnson had two-blee of his own, He had a yel-low

8 8 8 81 75 83 76 77 82 9 84 69 70 71 72 3 74

cat that would-st leave his house, He said and he said to

11 12 13 14 15 16 17 18 19 20 21 22 23 11 16 17 18 19 24 13

give the cat a - way, He gave it to a man go-ing the a -

CHORUS:

16 17 18 19 20 21 22 23 15 16 17 18 19 20 21 22 23 16 17 18 19 20 21 22 23

way. But the cat came back, the ve-ry next day, Yes, the

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46

cat came back, they thought he was a gos-s, But the cat came

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**God is So Good**

Traditional

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46

God is so good, God is so good,

God is so good, He's so good to me!

He cares for me, He cares for me,  
He cares for me, He's so good to me!

I love Him so, I love Him so,  
I love Him so, He's so good to me!

I praise His Name, I praise His Name,  
I praise His Name, He's so good to me!

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### Problems:

The main problem currently is taking the vertical distance of each note and turning that into a frequency.

### Plans:

From now until the project deadline, we are planning on finishing the remaining work on the project during the next week. This includes being able to order notes left to right based on their staff, detect what type of note the note is (quarter, half...) and play it audibly and then display the note on the keyboard picture.

Once this is done, we will start writing the report and the presentation.