Homework 3: Automatic Polyphonic Piano Transcription

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**[Experiments and Results]**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Baseline** | **RNN** | **CRNN** | **ONF** |
| **Frame** | **Frame Precision** |  |  |  |  |
| **Frame Recall** |  |  |  |  |
| **Frame F1** |  |  |  |  |
| **Onset Precision** |  |  |  |  |
| **Onset Recall** |  |  |  |  |
| **Onset F1** |  |  |  |  |
| **Note** | **Precision** |  |  |  |  |
| **Recall** |  |  |  |  |
| **F1** |  |  |  |  |
| **Overlap** |  |  |  |  |
| **Note with Offset** | **Precision** |  |  |  |  |
| **Recall** |  |  |  |  |
| **F1** |  |  |  |  |
| **Overlap** |  |  |  |  |

**Table 1.** xxxxx, iteration 10000

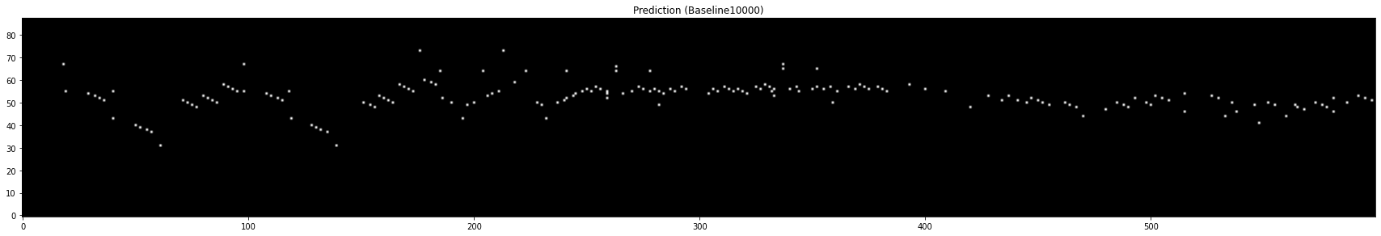
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Baseline** | **RNN** | **CRNN** | **ONF** |
| **Frame** | **Frame Precision** |  |  |  |  |
| **Frame Recall** |  |  |  |  |
| **Frame F1** |  |  |  |  |
| **Onset Precision** |  |  |  |  |
| **Onset Recall** |  |  |  |  |
| **Onset F1** |  |  |  |  |
| **Note** | **Precision** |  |  |  |  |
| **Recall** |  |  |  |  |
| **F1** |  |  |  |  |
| **Overlap** |  |  |  |  |
| **Note with Offset** | **Precision** |  |  |  |  |
| **Recall** |  |  |  |  |
| **F1** |  |  |  |  |
| **Overlap** |  |  |  |  |

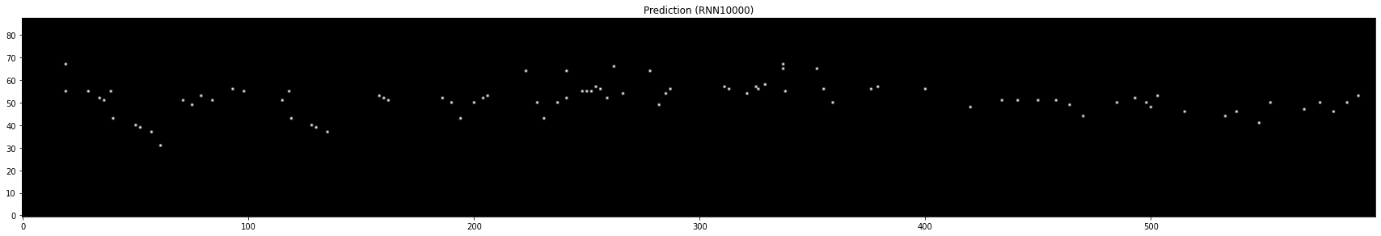
**Table 2.** xxxxx, iteration 20000

**[Discussion]**

1. Visualize at least one sample of your prediction (onset and frame) in the piano roll format



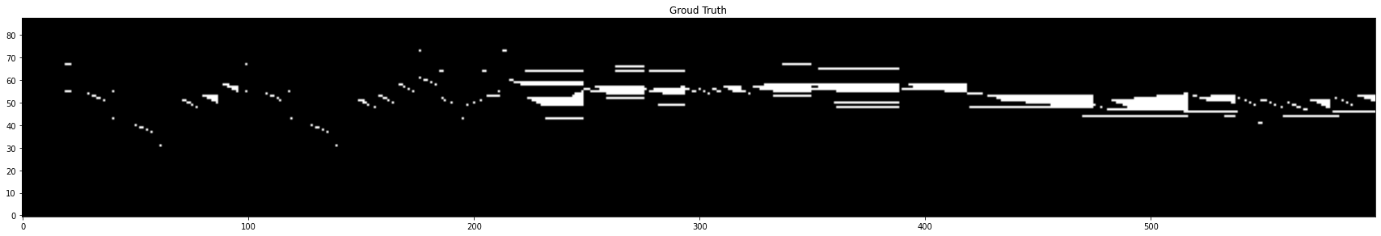


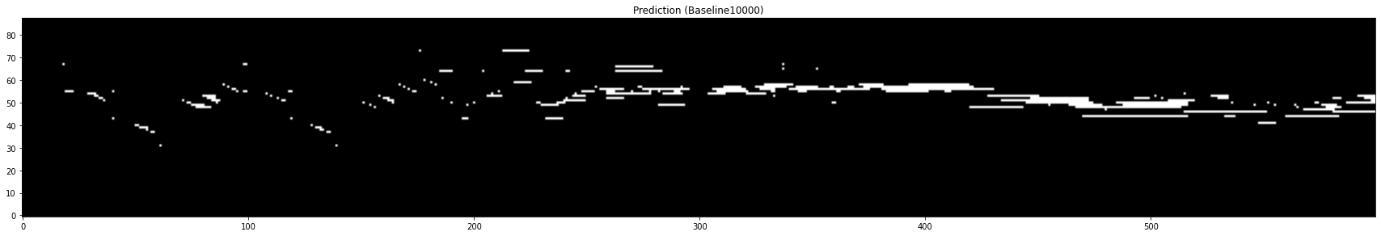


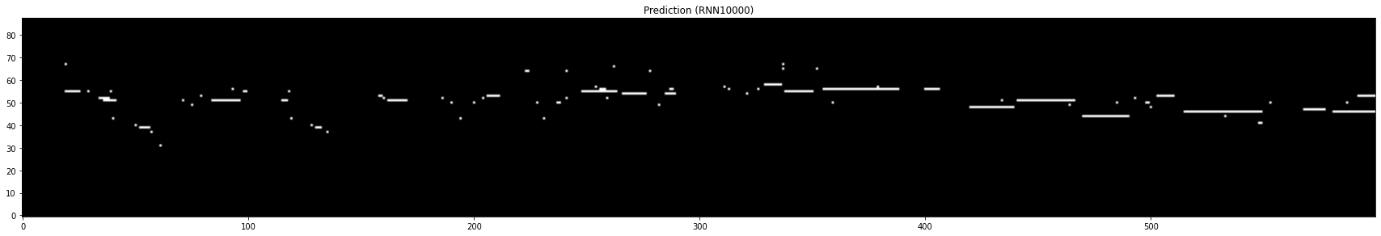


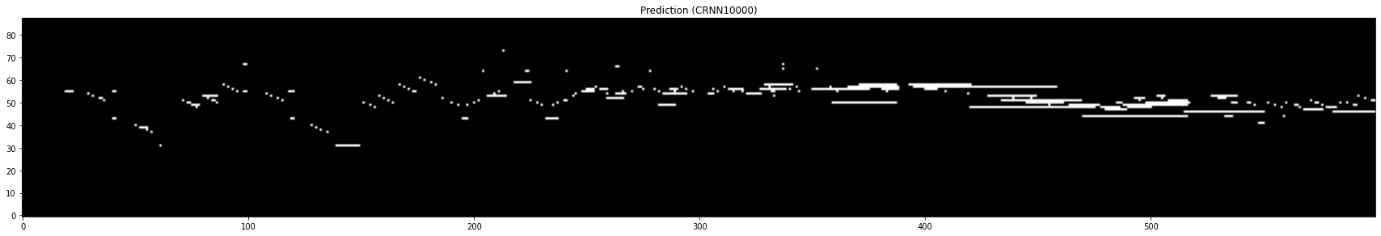


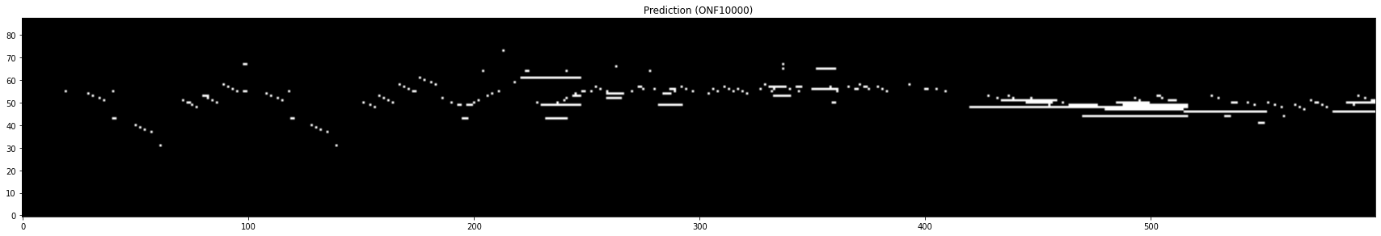
**Figure 1.** Visualization of Onset (Ground Truth, Prediction). A Part of the file ‘MIDI-Unprocessed\_SMF\_17\_R1\_2004\_03-06\_ORIG\_MID--AUDIO\_20\_R2\_2004\_12\_Track12\_wav’ file’





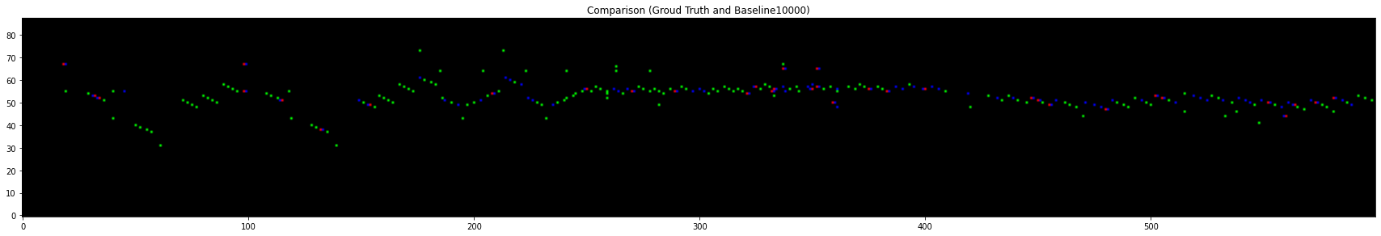


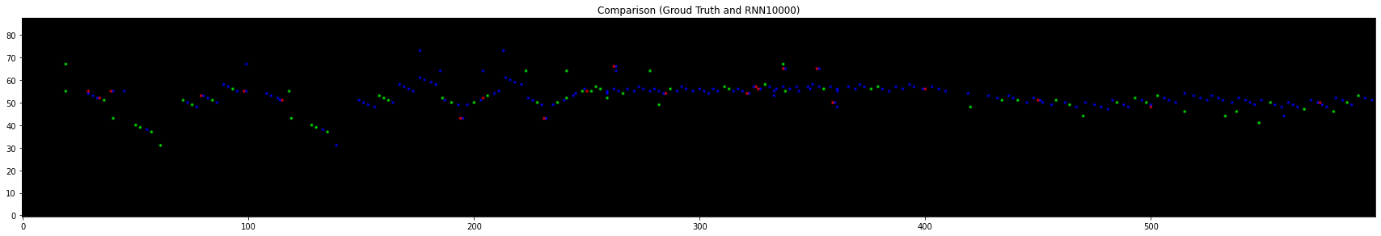


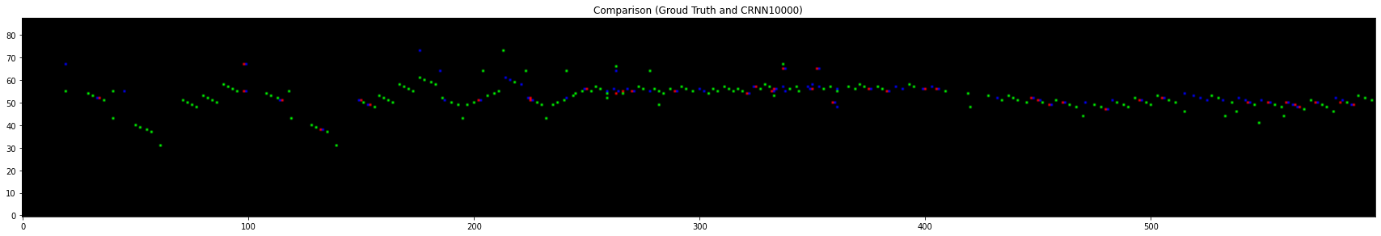
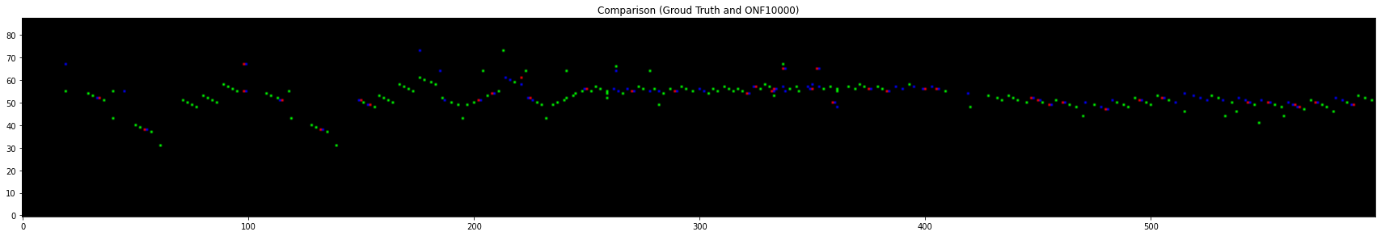


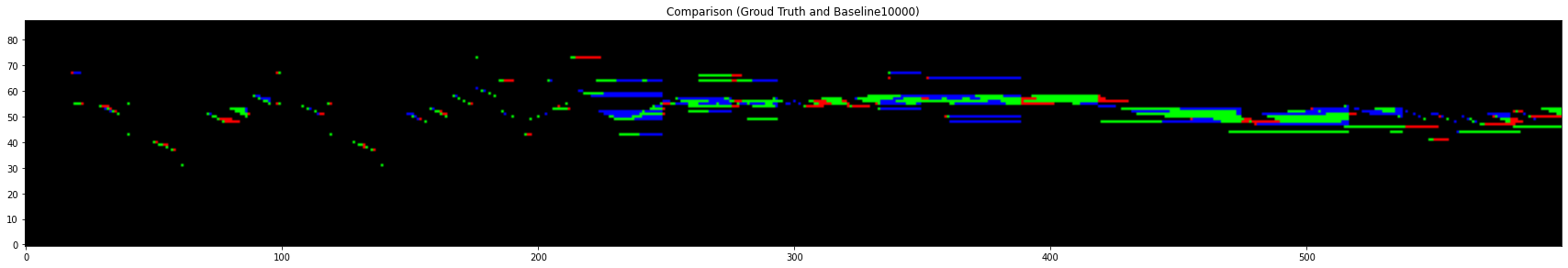
**Figure 2.** Visualization of Onset (Ground Truth, Prediction). A Part of the file ‘MIDI-Unprocessed\_SMF\_17\_R1\_2004\_03-06\_ORIG\_MID--AUDIO\_20\_R2\_2004\_12\_Track12\_wav’

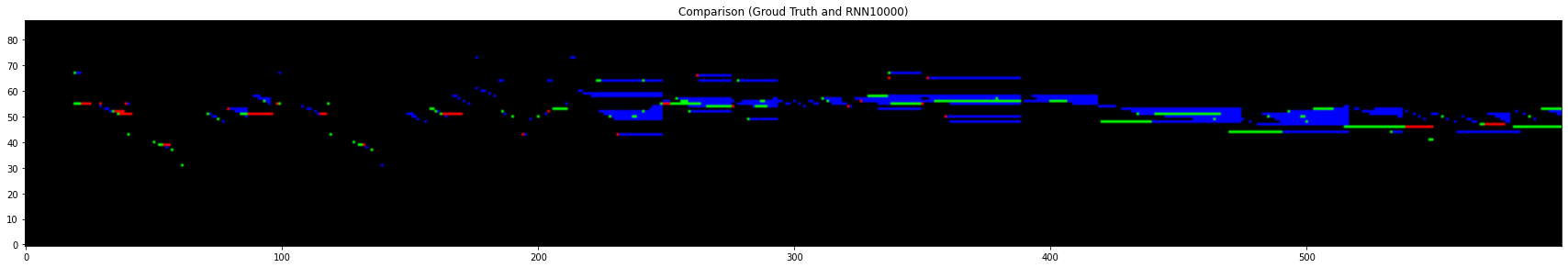
1. What kinds of errors did you observe?
   1. Are the predicted onsets and frames consistent with each other?
   2. Compare them with the ground truth and analyze the errors in both frame-wise and note-wise perspective.

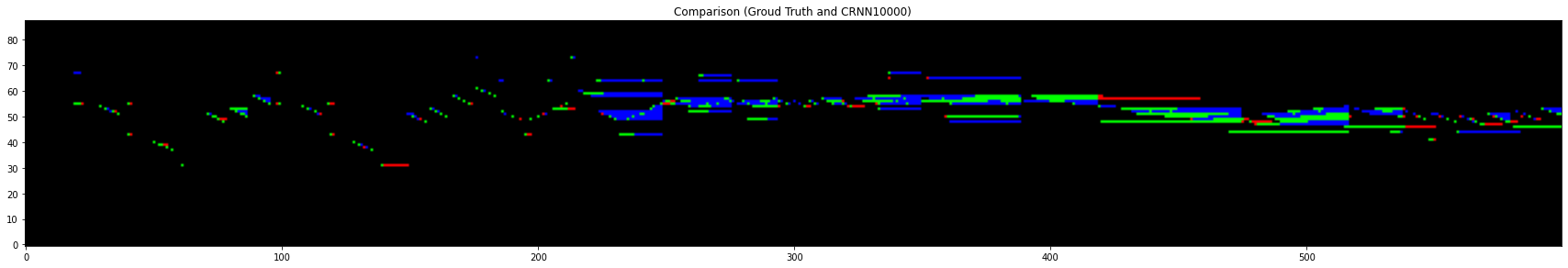


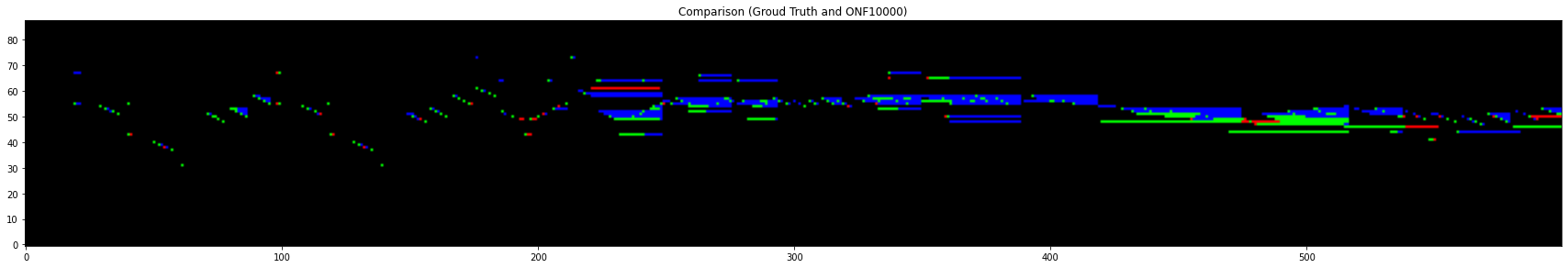












1. How would you improve the results?

**Reference**

[1] Onsets and Frames: Dual-Objective Piano Transcription, Curtis Hawthorne, Erich Elsen, Jialin Song, Adam Roberts, Ian Simon, Colin Raffel, Jesse Engel, Sageev Oore, Douglas Eck, ISMIR, 2018

[2] POLYPHONIC PIANO TRANSCRIPTION USING AUTOREGRESSIVE MULTI-STATE NOTE MODEL