ISY5001 Intelligent Reasoning Systems

Master of Technology in Intelligent Systems

---------- USER GUIDE ----------

Unlocking the Gateway to Music: A New Assistant for Music Learning

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Aug-Oct 2023

Group 16

Team Members

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Installation

Python 3.10.9
Essentia
numpy 1.16.3
librosa==0.7.2
Piano_ Translation_ Inference
Beautiful Soup 4.0
matplotlib 3.1.1
torch 1.9.0
libsndfile1
beautifulsoup4==4.9.1
nltk==3.5
piano_transcription_inference
youtube-dl
PyTorch (>=1.4)

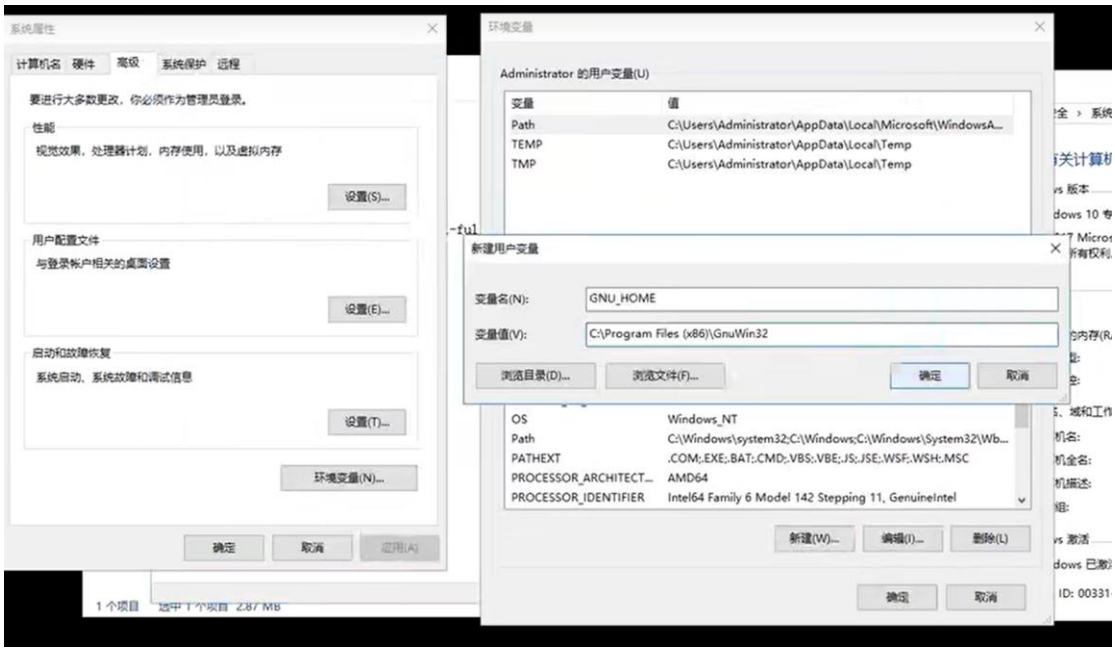
User Guide

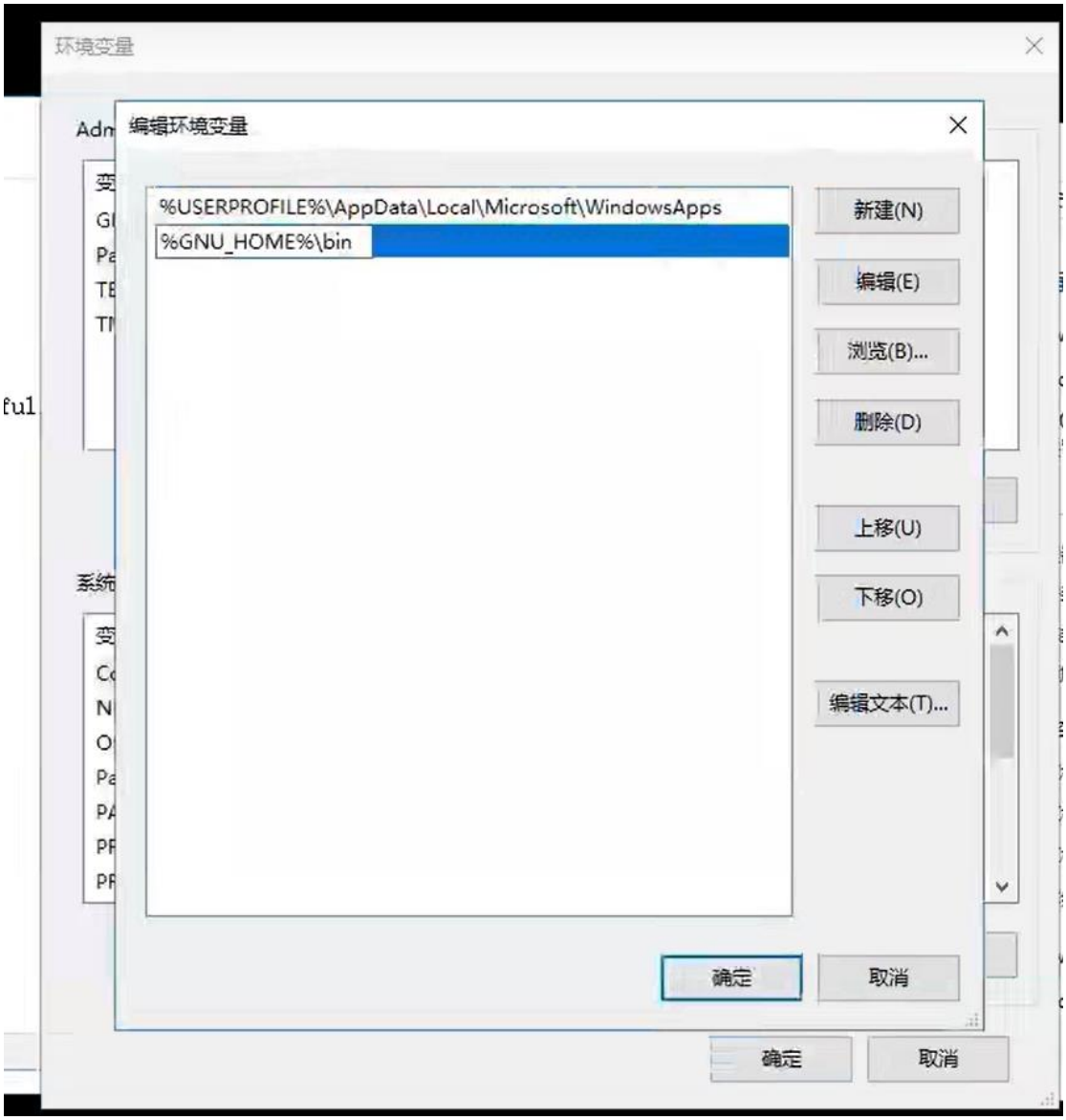
Install PyTorch (>=1.4) following https://pytorch.org/.

pip install -r requirements.txt

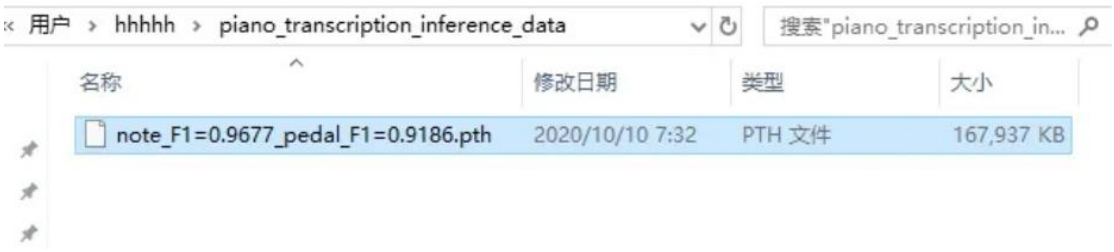
Install the wget.

Add system path.


系统属性
计算机名 硬件 高级 系统保护 远程
要进行大多数更改，你必须作为管理员登录。
性能
视觉效果，处理器计划，内存使用，以及虚拟内存
设置(S)...
用户配置文件
与登录帐户相关的桌面设置
设置(E)...
启动和故障恢复
系统启动，系统故障和调试信息
设置(T)...
环境变量(N)...
确定
取消
应用(A)
环境变量
Administrator 的用户变量(U)
变量
值
Path
C:\Users\Administrator\AppData\Local\Microsoft\WindowsA...
TEMP
C:\Users\Administrator\AppData\Local\Temp
TMP
C:\Users\Administrator\AppData\Local\Temp
新建用户变量
变量名(N):
GNU_HOME
变量值(V):
C:\Program Files (x86)\GnuWin32
浏览目录(D)...
浏览文件(F)...
确定
取消
OS
Windows_NT
Path
C:\Windows\system32;C:\Windows;C:\Windows\System32\Wb...
PATHEXT
.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECT...
AMD64
PROCESSOR_IDENTIFIER
Intel64 Family 6 Model 142 Stepping 11, GenuineIntel
新建(W)...
编辑(I)...
删除(L)
确定
取消
1 个项目


环境变量
编辑环境变量
%USERPROFILE%\AppData\Local\Microsoft\WindowsApps
%GNU_HOME%\bin
新建(N)
编辑(E)
浏览(B)...
删除(D)
上移(U)
下移(O)
编辑文本(T)...
确定
取消
确定
取消

Place the file note_F1=0.9677_pedal_F1=0.9186.pth in the following directory: (Create if not found)
C:\Users\your account name\piano_transcription_inference_data\



Install python and pytorch.

```
PS C:\Users\hhhhh\Desktop\资源包> pip install torch-1.4.0+cu92-cp37-cp37m-win_amd64.whl
Processing c:\users\hhhhh\desktop\资源包\torch-1.4.0+cu92-cp37-cp37m-win_amd64.whl
Installing collected packages: torch
Successfully installed torch-1.4.0+cu92
```

Install ffmpeg

Move the folder ffmpeg-4.3.1-2020-10-01-full_build to the directory
C:\Program Files\ Below

Install requirements.txt:
pip install -r requirements.txt

```
    100% |████████████████████████████████| 327kB 1.3MB/s
Requirement already satisfied: setuptools in c:\users\administrator\appdata\local\programs\python\python37\lib\site-packages (from numba==0.48->-r requirements.txt (line 4)) (40.8.0)
Collecting llvmlite<0.32.0,>=0.31.0dev0 (from numba==0.48->-r requirements.txt (line 4))
  Downloading https://pypi.doubanio.com/packages/1d/83/cd2843726a6316e372822e9e42cd0083b6d1d98d89d53880e7e67d5eec68/llvmlite-0.31.0-cp37-cp37m-win_amd64.whl (13.6MB)
    100% |████████████████████████████████| 13.6MB 1.2MB/s
Collecting future (from mir_eval==0.5->-r requirements.txt (line 6))
  Downloading https://pypi.doubanio.com/packages/45/0b/38b06fd9b92dc2b68d58b75f900e97884c45bedd2ff83203d933cf5851c9/future-0.18.2.tar.gz (829kB)
    100% |████████████████████████████████| 829kB 984kB/s
Collecting cycler>=0.10 (from matplotlib==3.0.3->-r requirements.txt (line 7))
  Downloading https://pypi.doubanio.com/packages/f7/d2/e07d3ebb2bd7af696440ce7e754c59dd546ffe1bbe732c8ab68b9c834e61/cycler-0.10.0-py2.py3-none-any.whl
Collecting kiwisolver>=1.0.1 (from matplotlib==3.0.3->-r requirements.txt (line 7))
  Downloading https://pypi.doubanio.com/packages/b2/55/6681ac2cc8de9bb612b1a777606e5beef240bf63aaa6cb03f44af5f42a77/kiwisolver-1.3.1-cp37-cp37m-win_amd64.whl (51kB)
    100% |████████████████████████████████| 61kB 8.0MB/s
Collecting pyparsing!=2.0.4,!=2.1.2,!=2.1.6,>=2.0.1 (from matplotlib==3.0.3->-r requirements.txt (line 7))
  Downloading https://pypi.doubanio.com/packages/8a/bb/488841f56197b13700afd5658fc279a2025a39e22449b7cf29864669b15d/pyparsing-2.4.7-py2.py3-none-any.whl (67kB)
    100% |████████████████████████████████| 71kB 408kB/s
Collecting threadpoolctl>=2.0.0 (from scikit-learn!=0.19.0,>=0.14.0->librosa==0.6.0->-r requirements.txt (line 3))
  Downloading https://pypi.doubanio.com/packages/f7/12/ec3f2e203afa394a149911729357aa48affc59c20e2c1c8297a60f33f133/threadpoolctl-2.1.0-py3-none-any.whl
Installing collected packages: numpy, six, h5py, python-dateutil, pytz, pandas, audioread, scipy, joblib, threadpoolctl, scikit-learn, decorator, llvmlite, numba, resampy, librosa, mido, future, mir-eval, cycler, kiwisolver, pyparsing, matplotlib, torchlibrosa, sox
  Running setup.py install for audioread ... done
```

After the installation is complete, restart to ensure that all settings take effect.

Use pip to install piano_transcription_inference and run it.

In [1]:
```
from piano_transcription_inference import PianoTranscription, sample_rate, load_audio
```

In [2]:
```
# Load audio
(audio, _) = load_audio('./Haru_Haru.mp3', sr=sample_rate, mono=True)
```

In [6]:
```
# Transcriptor
transcriptor = PianoTranscription(device='cpu', checkpoint_path=None)    # 'cuda' | 'cpu'
```

```
Checkpoint path: C:\Users\60963/piano_transcription_inference_data/note_F1=0.9677_pedal_F1=0.9186.pth
Using cpu for inference.
Using CPU.
```

In [4]:
```
# Transcribe and write out to MIDI file
transcribed_dict = transcriptor.transcribe(audio, 'Haru_Haru.mid')
```

```
Segment 0 / 17
Segment 1 / 17
Segment 2 / 17
Segment 3 / 17
Segment 4 / 17
Segment 5 / 17
Segment 6 / 17
Segment 7 / 17
Segment 8 / 17
Segment 9 / 17
Segment 10 / 17
Segment 11 / 17
Segment 12 / 17
Segment 13 / 17
Segment 14 / 17
Segment 15 / 17
Segment 16 / 17
Segment 17 / 17
Write out to Haru_Haru.mid
```