

IMelodist 小组

第一阶段分享总结



InternLM-Melodist

I AM Melodist

Contributors 4



PommesPeter PommesPeter



GuoYiFantastic 郭一凡



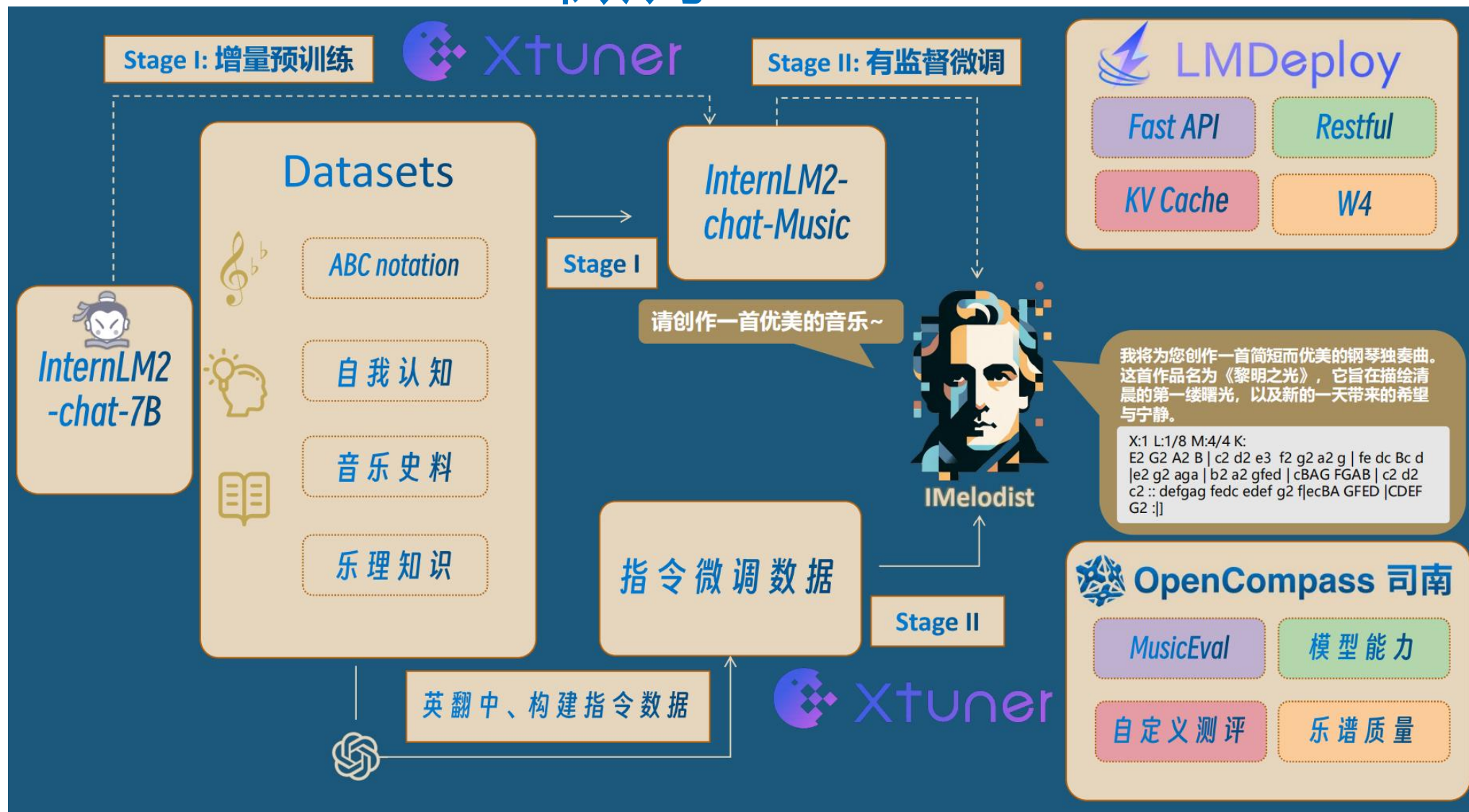
SchweitzerGAO Yangfan (Charles) Gao



chaos328296

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基于internLM2-chat微调



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学习、借鉴 ChatMusician


<https://huggingface.co/m-a-p/ChatMusician>

```
X:1
L:1/8
M:2/4
K:Amin
|:"Am" A, z C z | E z A z | c4- | c4 | d2 c2 |
A2 G2 | "F" A3 G | A2 F2 | E2 F2 | D2 E2 | F4- | F4 |
G2 A2 | F2 G2 | 1"C" E3 _E | D2 C2 | "G" D4- | D4 :| 2
"C" E3 D | C2 B, 2 | "Am" A, 4- | A, 4 ::
"Am" A, C E2 | E ^G A2 | "F" c4 | A4 | "C" c2 d2 |
e2 c2 | "G" d3 c | d2 B2 | GA c2 | c2 B2 | "F" A4 |
F4 | "G" G3 A | GAGF | 1"C" E3 F | EDCB, | "Am" A, 4- |
A, 4 :| 2"C" E3 D | C2 B, 2 | "Am" A, z3 | z4 :|
```



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m-a-p / **ChatMusician**

like 82



Text Generation



Transformers



PyTorch



English

llama



Inference Engine



Model card



Files and versions



Community 4



ChatMusician: Understanding and Generating Music Intrinsically with LLM





[DemoPage](#) | [Pretrain Dataset](#) | [SFT Dataset](#) | [Benchmark](#) | [arXiv](#) |



[Code](#) | [Base Model](#)



News

-  [2024-2-28]: The release of ChatMusician's demo, code, model, data, and benchmark. 
- [2024-2-28]: ChatMusician uses a fast symbolic music processing and rendering library, symusic. Developed by Yikai-Liao, lzqlzzq and Natooz. Find the project on Github: <https://github.com/Yikai-Liao/symusic>

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测试ChatMusician性能

<https://ezmonyi.github.io/ChatMusician/>

基座模型：
llama-7b-base

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测试ChatMusician性能

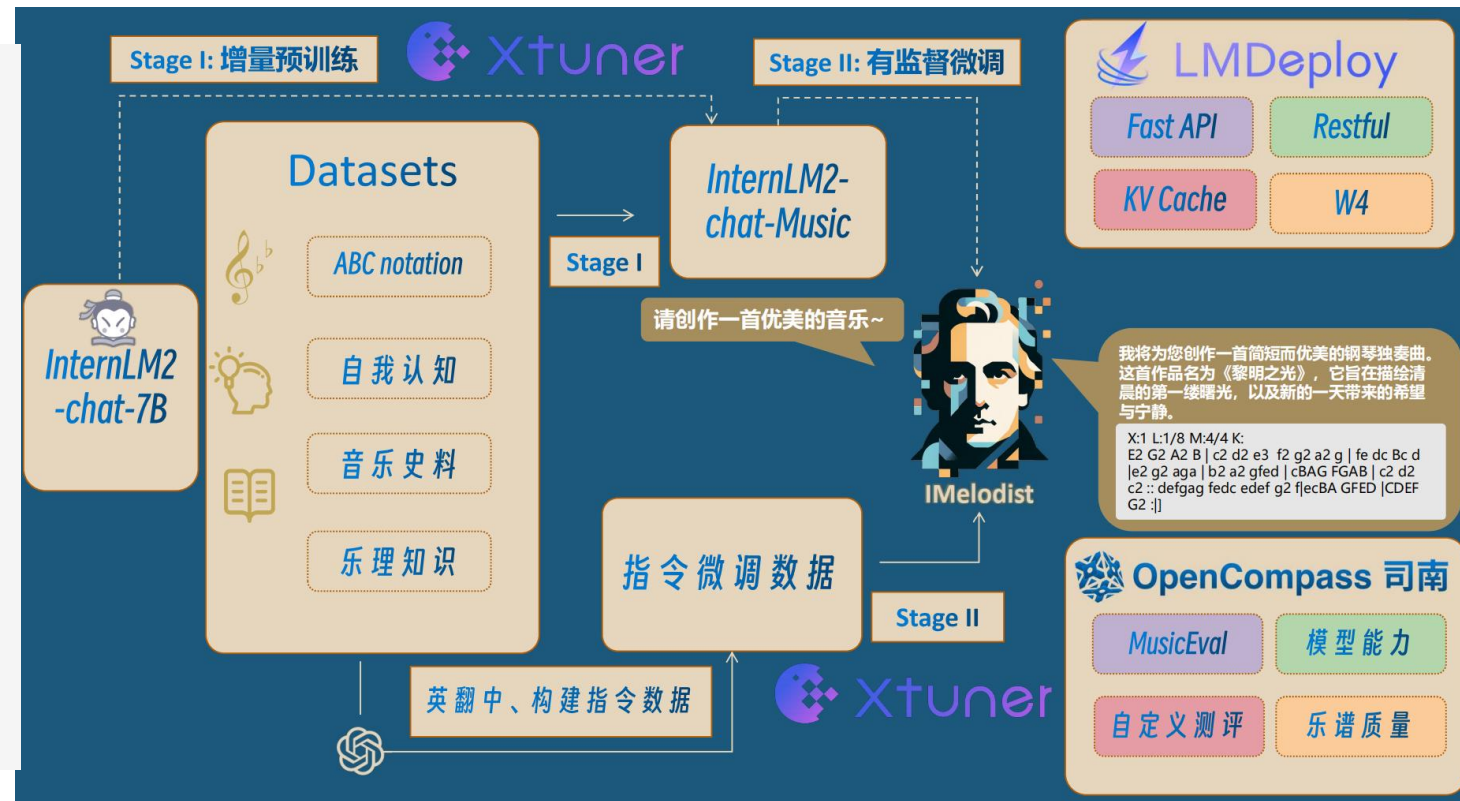
<https://ezmonyi.github.io/ChatMusician/>

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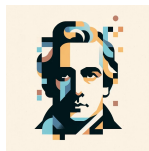
增量微调+SFT

```
X:1
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M:2/4
K:Amin
|:"Am" A, z C z | E z A z | c4- | c4 | d2 c2 |
A2 G2 | "F" A3 G | A2 F2 | E2 F2 | D2 E2 | F4- | F4 |
G2 A2 | F2 G2 | 1"C" E3 _E | D2 C2 | "G" D4- | D4 :|2
"C" E3 D | C2 B, 2 | "Am" A, 4- | A, 4 ::
"Am" A, C E2 | E ^G A2 | "F" c4 | A4 | "C" c2 d2 |
e2 c2 | "G" d3 c | d2 B2 | GA c2 | c2 B2 | "F" A4 |
F4 | "G" G3 A | GAGF | 1"C" E3 F | EDCB, | "Am" A, 4- |
A, 4 :|2"C" E3 D | C2 B, 2 | "Am" A, z3 | z4 :|
```



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增量微调数据



数据收集

- ABC乐谱数据集的全部来源是 `sander-wood/irishman` 开源数据集，以及 `m-a-p/MusicPile-sft` 中基于 `irishman` 数据集构建的部分。
- 乐谱知识、音乐历史、音乐赏析数据均来源于互联网，通过openchat翻译、润色。
- 自我认知数据集一部分由团队成员手动书写，另一部分由openchat通过合适的prompt产生。

开源数据集irishman

Datasets: sander-wood/irishman		Dataset card	Viewer
Split (2) train · 214k rows			
Search this dataset			
abc notation string · lengths 22~317 71.1%			
X:1 L:1/8 M:4/4 K:Emin : E2 EF E2 EF DEFG AFDF E2 EF E2 B2 1 efe^d e2 e2 : 2 efe^d e3 B : e2 ef g2 fe defg afd 1 e2 ef g2 fe efe^d e3 B : 2 g2 bg f2 af efe^d e2 e2	S:2 B:5 E:5 B:6		
X:2 L:1/4 M:3/4 K:C G E3/2 E/ E G2 G c2 c G2 G G2 c/>c/ B2 d d3 c2 G e2 e e d c B2 A A2 A B2 B d2 d d3 c2]	S:1 B:25		
X:3 L:1/8 Q:1/4=100 M:2/4 K:Emin E ABcA E2 EF G2 GB (d/c/B/A/) GB AGAB E2 E=f edcB A2 A :: B c>Bce d>cde c>Bce (d/c/B/A/) GB c>Bce dcd=f edcB A2 A ::]	S:2 B:9 E:7 B:9		
X:4 L:1/8 M:6/8 K:A : EFG "A" A2 A A2 A "F#m" A2 A A2 A "B7" B2 A G2 F "E7" E6 "A" A2 A A3 "D" A2 A A3 "A" c2 A "E7" B2 G "A fine" A3 : "A7" A2 A "D" F6- F3 A2 A "A" E6- E3 A2 G...	S:4 B:1 E:1 B:8 E:3 E:1 B:1 E:1 E:4 E:1 B:8		
X:5 L:1/8 M:6/8 K:G (G/A/B).D D>ED DcB AGA (G/A/B).D D>ED GAG GED (G/A/B).D DED DcB cde dBG ABc BcA GED :: GBd GBd GBd eCA GBd efg GAG GED GBd GBd GBd def gfg dBA GAG...	S:2 B:8 E:5 B:8		
X:6 L:1/8 M:3/4 K:Emin E/F/G/A/ B2 e2 ^d/e/f/d/ B2 B2 cB AG FE E/F/^G/A/ B2 B2 gb fa eg fe ^df BA gb fa eg fe/^d/ e2 E2 :: dd/e/ d2 B2 cB/A/ B2 G2 dd/e/ d2 B2 cB/A/ B4 cB AG FE E/F/G/A/ B4 gb fa eg fe ^df BA gb fa eg fe/^d/ e4 :	S:2 B:8 E:7 B:10		
X:7 L:1/16 M:2/4 K:D A2F2 A2d2 d2c2 edc2 A2ce g2c2 e2d2 fed2 A2F2 A2d2 d2c2 edc2 A2ce g2c2 d2d2 d2 z2 :: d2B2 dcB z A2de fed2 cde z efg z gffg fed z d2B2 dcB z A2defed2 ...	S:3 B:8 E:5 B:8 E:4 E:4 B:8		
X:8 L:1/4 M:2/2 K:G d/c/ B d d c/B/ c e e d/c/ B d d c/B/ c A A d/c/ B d d c/B/ c e e d/c/ B d A/B/c/A/ B G G : d/c/ B d g a g/f/e/f/ g d B d g f/g/ a A A d/c/ B d g a ...	S:2 B:9 E:7 B:9		
X:9 L:1/8 M:4/4 K:A CD EA, A,2 EA,FA, EA, A,2 A,3 c dcBA GABc BB, B,2 B,2 CD EA, A,2 ...	S:2 B:9 E:7 B:9		

[irishman2json-increment.py](#)

```
for d in data:
    output = d["abc notation"]
    if len(output) <= 2900:
        continue
    conversation = {
        "system": "",
        "input": "",
        "output": output
    }
    conversations.append({"conversation": [conversation]})
```

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SFT数据

数据收集

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- 自我认知数据集一部分由团队成员手动书写，另一部分由openchat通过合适的prompt产生。

<https://huggingface.co/datasets/m-a-p/MusicPile-sft>

instruction	input	output	src
string · lengths	string · lengths	string · lengths	string · classes
			
8 416	0 14.5k	21 9.34k	4 values
Human: Design melodic...	'A', 'D', 'E7', 'A', 'E/G#', 'A', 'Bm', 'A7/C#', 'D', 'E7', 'A', 'A'...	Assistant: X:1 L:1/8 M:2/2 K:A CS "A" A,...	https://huggingface.co/dataset/wood/irishman
Human: Assemble a piece of music by...	AA;X:1 L:1/4 M:2/2 K:F ['c A'] </s>	Assistant: X:1 L:1/4 M:2/2 K:F :"F" A3/2...	https://huggingface.co/dataset/wood/irishman
Human: Construct music employing...	A;X:1 L:1/8 M:3/4 K:C ['c B'] </s>	Assistant: X:1 L:1/8 M:3/4 K:C G2 c2 G2...	https://huggingface.co/dataset/wood/irishman
Human: Produce melodies followin...	'Binary', 'Sectional: Verse/Chorus'];X:1 L:1/8 M:4/4 K:D...	Assistant: X:1 L:1/8 M:4/4 K:D a2 fa g2 eg...	https://huggingface.co/dataset/wood/irishman
Human: Examine the piece of music to...	X:1 L:1/8 M:6/8 K:G D G3 G2 g dBG GAB cGE EFG AFD DEF G3 G...	Assistant: G3 G2 </s>	https://huggingface.co/dataset/wood/irishman

[irishman2json-sft.py](#)

```
conversation = {  
    'system': system_prompt,  
    'input': input_prompt,  
    'output': output  
}  
final_dataset.append({'conversation': [conversation]})
```


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自我认知

IMelodist 小组

下游任务

ChatMusician:

Understanding and Generating Music Intrinsically with LLM

Ruibin Yuan^{*}, Hanfeng Lin^{*}, Yi Wang^{*}, Zeyue Tian^{*}, Shangda Wu^{*},

Tianhao Shen, Ge Zhang, Yuhang Wu, Cong Liu, Ziya Zhou, Ziyang Ma, Liumeng Xue,

Ziyu Wang, Qin Liu, Tianyu Zheng, Yizhi Li, Yinghao Ma, Yiming Liang, Xiaowei Chi, Ruibo Liu, Zili Wang, Pengfei Li, Jingcheng Wu,


Chenghua Lin, Qifeng Liu, Tao Jiang, Wenhao Huang, Wenhui Chen, Emmanouil Benetos, Jie Fu, Gus Xia, Roger Dannenberg,

Shiyin Kang⁺, Wei Xue⁺ Yike Guo⁺

► Hong Kong University of Science and Technology ► Multimodal Art Projection ► Carnegie Mellon University

► Central Conservatory of Music ► Mohamed bin Zayed University of Artificial Intelligence ► Skywork AI PTE. LTD.


^{*}Major Contribution

 Paper

 Code

 Space

 Video

 Benchmark

Dataset

[DISCUSSION: SFT 数据集构建 Storm #7](#)

[SFT数据集的获取方法-version1 #8](#)

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部署前的最后一步

检测模型的output中
是否有ABC谱

若有

ABC文本
->
音频文件

IMelodist 小组

未来展望

1. 优化数据集质量，进一步挖掘internLM-chat-7B模型在音乐领域的潜能。
2. 在7B模型的基础上，集成agent、rag，优化模型表现，丰富模型功能。在必要时，比如帮助模型产生思维链时，考虑在基座模型合适部位嫁接上合适大小的AI模块。
3. 模型蒸馏，在1.8B模型上实现卓越的作曲功能。

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