

RWC Music Database

Music Genre Database and Musical Instrument Sound Database

Overview

Introduction

- ❑ We need **commonly available DBs** to advance research into music information processing
 - ex) *music understanding, source segregation, music perception, encoding/compression, MIR*
- ❑ Three main purposes
 - Use DBs as a **common benchmark**
Compare and evaluate various systems
 - Stimulate research in **corpus-oriented approach**
Use statistical methods or learning techniques
 - Use DBs for **research publication & presentation**
Demos w/o conventional copyright restrictions
Include demo videos in conference CD-ROMs

RWC Music Database

- ❑ **Copyright-cleared music DB** compiled specifically for research purposes
 - Researchers can obtain and use freely in common for research purposes
(Note that our DB is not copyright-free even though it is available for free for research purposes)
 - 315 pieces (27 CDs) + 50 instruments (12 DVDs)
- ❑ Content: six component DBs
 - **Popular Music DB (100 songs)**
All originally composed and arranged
20/80 songs with English/Japanese lyrics
 - **Royalty-Free Music DB (15 songs)**
Well-known public-domain songs (with vocals)
originally arranged and recorded
 - **Classical Music DB (50 pieces)**
Public-domain pieces originally recorded
6 categories: *symphony 4, concerto 2, orchestral 4, chamber 10, solo 24, vocal 6*
 - **Jazz Music DB (50 pieces)**
46 pieces originally composed and arranged
4 public-domain pieces originally arranged
3 categories: *instrumentation variations 35, style variations 9, fusion 6*
 - **Music Genre DB (100 pieces)**
 - **Musical Instrument Sound DB (50 instruments)**



Previous Work

- ❑ Other research fields have common DBs
 - Speech and image processing
Importance and significance of DBs have been widely recognized
 - ❑ Music information processing
 - Difficult to use music on market CDs because of copyright issues
 - **Musical pieces**: no copyright-cleared DB released for public use
 - **Musical instruments**: there are DBs
 - McGill University Master Samples
 - University of Iowa Musical Instrument Samples
- ➡ There is still a need for a large-scale common DB

Design Policy

- ❑ Content
 - Include as **many realistic pieces** and **much variety** (genres, moods, tempi, etc.) as our production resource constraints allowed
- ❑ Copyrights of musical pieces
 - Obtain **all necessary copyrights** and **associated legal interests** related to the DB to make the DB available to researchers
 - All newly performed, sung, and recorded
 - Music Genre DB
27 public-domain pieces + 73 original pieces composed and arranged for this DB
- ❑ SMFs (Standard MIDI Files) and lyrics text files
 - Prepare **transcribed SMFs** for all pieces
 - Valuable because they can be freely used for research purposes as effective substitutes for scores
 - Song lyrics are provided as text files

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Specification

Content (Version)	Quantity	CD/DVD Catalog Number	Piece/Instrument Nos.
Popular Music Database (Original Version: <u>Mixed</u>)	7 CDs	RWC-MDB-P-2001-M01 — M07	Nos. 1—100
Royalty-Free Music Database (Original Version: <u>Mixed</u>)	1 CDs	RWC-MDB-R-2001-M01	Nos. 1—15
Classical Music Database (Original Version: <u>Mixed</u>)	6 CDs	RWC-MDB-C-2001-M01 — M06	Nos. 1—50
Jazz Music Database (Original Version: <u>Mixed</u>)	4 CDs	RWC-MDB-J-2001-M01 — M04	Nos. 1—50
Music Genre Database (Original Version: <u>Mixed</u>)	9 CDs	RWC-MDB-G-2001-M01 — M09	Nos. 1—100
Musical Instrument Sound Database (Wave Files)	12 DVDs	RWC-MDB-I-2001-W01 — W12	Nos. 01—50

Catalog number: RWC-MDB-[Content]-[Year]-[Version][Volume No.], Content: The underlined letter, Year: Made in 2001

Music Genre DB

□ 100 musical pieces (33 genres)

- All 100 pieces are original recordings
 - 73 pieces originally composed and arranged
 - 27 public-domain pieces
 - (classical, marches, vocals, traditional Japanese)

• 33 genres x 3 pieces + 1 piece (a cappella)

10 main Categories	33 subcategories
1. Popular	1. Popular 2. Ballade
2. Rock	3. Rock 4. Heavy Metal
3. Dance	5. Rap / Hip-Hop 6. House 7. Techno 8. Funk 9. Soul / R&B
4. Jazz	10. Big Band 11. Modern Jazz 12. Fusion
5. Latin	13. Bossa Nova 14. Samba 15. Reggae 16. Tango
6. Classical	17. Baroque 18. Classic 19. Romantic 20. Modern
7. March	21. Brass Band
8. World	22. Blues 23. Folk 24. Country 25. Gospel 26. African 27. Indian 28. Flamenco
9. Vocal	29. Chanson 30. Canzone
10. Traditional Japanese	31. Popular (<i>Enka</i>) 32. Folk (<i>Min'you</i>) 33. Court (<i>Gagaku</i>)

Musical Instrument Sound DB

□ 50 musical instruments (29.1 Gbytes)

- Performances of about 150 instrument bodies
 - 3 variations for each instrument
- Provide a wide variety of sounds
 - **Variations** (3 instrument manufacturers, 3 musicians)
Different manufacturer / different musician
 - **Pitch** (total range)
Individual sounds at half-tone intervals
 - **Playing style** (instrument dependent)
Many playing styles possible for each inst.
 - **Dynamics** (3 dynamic levels)
Forte, mezzo, piano



ex) RWC-MDB-I-2001 No.01 Pianoforte
Total of 3168 (3 x 88 x 4 x 3) individual sounds:
3 var. (Yamaha, Bösendorfer, Steinway) x
88 keys x 4 styles (normal, staccato, etc.) x 3

• Total size

- Sound files: **29.1 Gbytes (3544 files)**
91.6 hours (16 bit / 44.1 kHz / monaural)
- Image files: **703.1 Mbytes (948 files)**
Five color photos of each instrument body

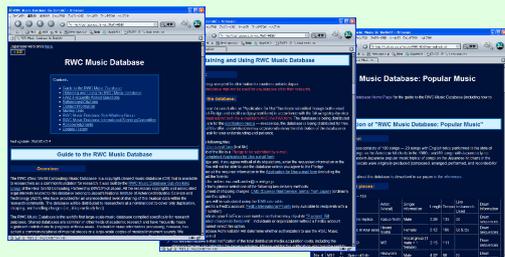
01 Pianoforte	18 Contrabass	35 Shakuhachi
02 Electric Piano	19 Harp	36 Banjo
03 Harpsichord	20 Timpani	37 Shamisen
04 Vibraphone	21 Trumpet	38 Koto
05 Marimba	22 Trombone	39 Sho
06 Pipe Organ	23 Tuba	40 Japanese Percussion
07 Accordion	24 Horn	41 Concert Drums
08 Harmonica	25 Soprano Sax	42 Rock Drums
09 Classic Guitar	26 Alto Sax	43 Jazz Drums
10 Ukulele	27 Tenor Sax	44 Percussion
11 Acoustic Guitar	28 Baritone Sax	45 Soprano
12 Mandolin	29 Oboe	46 Alto
13 Electric Guitar	30 Bassoon	47 Tenor
14 Electric Bass	31 Clarinet	48 Baritone
15 Violin	32 Piccolo	49 Bass
16 Viola	33 Flute	50 R&B Vocal
17 Cello	34 Recorder	

URL of the RWC Music Database:
<http://staff.aist.go.jp/m.goto/RWC-MDB/>

Distribution

How To Obtain

- Guide to the RWC Music Database
 - <http://staff.aist.go.jp/m.goto/RWC-MDB/>

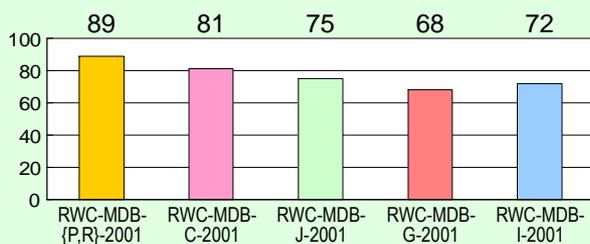


- Available to researchers around the world at a nominal cost to cover only duplication, shipping, and handling charges (i.e., it is practically free)

RWC-MDB-P-2001-M01 — M07	9,000 Yen
+ RWC-MDB-R-2001-M01	
RWC-MDB-C-2001-M01 — M06	8,000 Yen
RWC-MDB-J-2001-M01 — M04	8,000 Yen
RWC-MDB-G-2001-M01 — M09	9,000 Yen
RWC-MDB-I-2001-W01 — W12	15,000 Yen

- The number of distributions (at 2003/10/15)

- Total: 385



Conclusion

- RWC Music Database is now complete with the six component DBs
 - Built in fiscal 2000 and 2001 by the *RWC Music Database Sub-Working Group* (chair: Masataka Goto) in the *RWCP* (*Real World Computing Partnership*) of Japan
 - We hope that our DB is a first step toward the construction of DBs for specialized purposes and will accelerate progress in the field of research