

The GUIDO Symbolic Music Notation Format

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GUIDO in a nutshell

- ASCII, human-readable representation of musical scores
- Free and platform independent
- *Representational adequacy*: simple concepts
→ simple representation
- Range of applications: notation software, compositional/analytical tools, databases, WWW...

(Hoos et al. 1998a)

History of Guido

- Guido d'Arezzo: 990-1050 A.D.
- Developed conventional musical notation (CMN)
- Solfege
(GUIDO website)

History of GUIDO

- Preliminary development 1992-93, with SALIERI music system and language
 - 1996: Holger H. Hoos, SALIERI project group at Technical University in Darmstadt, Germany
 - 1997: Keith A. Hamel, UBC (Vancouver)
- (GUIDO website)

Versions

- Basic: core syntax, basic musical elements (notes, slurs, staves...)
- Advanced: exact score formatting (no information loss)
- Extended: other features

(Hoos and Hamel 1997, Hoos et al. 1998a)

Basic Notation Overview

- *Events*: Musical entities having duration (note, rest, ...)
- *Tags*: Define musical attributes (clef, key...)
- *Sequences*: Temporally consecutive musical objects
- *Segments*: Simultaneous objects (chords)
(Hoos and Hamel, 1997, Hoos et al. 1998a)

Basic Notation: Notes

- Format:
Note_name accidental octave duration dotting
- Note names: “g”, “sol”
- Accidental: #, & (flat), ##, &&, ...
- Octave: 1, 2, -1, ... (440Hz is “a1”)
- Duration: “*1/4”, “/4”, “*2”
- Dotting: “.”, “..”
- Example:

a&1*1/4.

Basic Notation: Tags

- 1. `\id`
- 2. `\id<param-list>`
- 3. `\id(note-series)`
- 4. `\id<param-list> (note-series)`
- *Example:*
`\clef<"g2"> % treble clef`
`\slur(c1/4 d e) % slurred group`
`\label<"motive A">(g1/2 f#/4 g g#/2)`

Basic Notation: Chords

- Chords: {c1, e1, g1}

- Chord sequences:

[{f1, a1, c2} {d1, g1, b1} {e1, g1, c2}]

Notation example

```
{ [ \meter<"4/4"> c d e c c d e c e f g/2  
e/4 f g/2 g/8 a g f e/4 c g/8 a g f e/4 c],  
[ \meter<"4/4"> _*8/4 c/4 d e c c d e c e  
f g/2 e/4 f g/2 ] }
```

(GUIDO Noteserver)

Graphic rendering of example

GUIDO Noteserver 0.5. Powered by the SALIERI-Project ©.
<http://www.informatik.tu-darmstadt.de/AFS/GUIDO>

The image displays two systems of musical notation in 4/4 time. The first system consists of two staves: the upper staff (treble clef) contains a melody of quarter notes (C4, D4, E4, F4, G4, A4, B4, C5) and half notes (C5, B4, A4, G4, F4, E4, D4, C4); the lower staff (bass clef) contains a bass line of quarter notes (C3, D3, E3, F3, G3, A3, B3, C4) and half notes (C4, B3, A3, G3, F3, E3, D3, C3). The second system also consists of two staves: the upper staff (treble clef) contains a melody of eighth notes (C4, D4, E4, F4, G4, A4, B4, C5) and quarter notes (C5, B4, A4, G4, F4, E4, D4, C4); the lower staff (bass clef) contains a bass line of quarter notes (C3, D3, E3, F3, G3, A3, B3, C4) and half notes (C4, B3, A3, G3, F3, E3, D3, C3). Both systems end with a double bar line.

Related Projects

1. SALIERI
2. GUIDOLib and Noteviewer
3. Noteserver
4. GUIDO/XML and GUIDO/MIR
5. MIR Workbench
6. MusicBLAST
7. Converters

1. SALIERI

- “a universal programming language based on a hierarchical model of formal music representation, combining features of traditional functional and procedural programming languages with powerful concepts for manipulating musical material.”
 - For theory, composition, education
 - GUIDO is underlying music representation type
 - No recent (post-2003) work available
- (Hoos et al. 1998b, SALIERI website)

2. GUIDOLib and Noteviewer

- “The GUIDOLib project aims at developing a generic library for rendering of musical scores. The library takes account of the conventional music notation system and should be flexible enough to include any graphical sign and symbol if necessary.” (Sourceforge website, GUIDOLib website)
- Start with GUIDO file, end with graphical notation
- Active and recent development, Mac OS X and Win32

3. Noteserver

- WWW interface for notation display
- Enter GUIDO, see notation (Noteviewer)
- Interface: CGI, Applet, or extended URL
- Updated 2003-04

(Renz and Hoos 1998, Noteserver website)

4. GUIDO/XML and GUIDO/MIR

- GUIDO/MIR: Simple database, content-based retrieval (query-by-example), GUIDO represented data
- GUIDO/XML: encapsulates GUIDO in XML structure in order to use XML tools
- Positive results on demo database (150 pieces), but no work since then is available.
(Hoos et al. 2001)

5. MIR Workbench

- David Bainbridge (Waikato, New Zealand)
- White paper 2002: Use XML GUIDO as basis for MIR workbench
- Work after 2002 not available
(Bainbridge 2002)

6. MusicBLAST

- Jurgen Kilian and Holger Hoos, ISMIR 2004
- BLAST: Similarity algorithm for biological data
- Offers *approximate* pattern matching for melodic and rhythmic data
- MIDI or GUIDO as underlying representation

7. Converters

GUIDO to/from:

- MIDI, Sibelius, Finale, MusicXML, Glde, GUIDO XML, GUIDOLib, Gamera, NoteAbility, pyScore, QuickScore, ...

Conclusion

- GUIDO is simple
- GUIDO has been used in a variety of applications
- There are many existing GUIDO tools available for music research, or just for those wanting to learn more about it

References

- See

http://www.music.mcgill.ca/~rebecca/611/guido_annotated_bibliography.htm

for annotated bibliography.