

# Masataka Goto's Work



Gabriel Vigliensoni  
Music Technology Area  
Schulich School of Music  
McGill University



# Outline

Masataka Goto

Research Fields

Music Audio Signal Understanding

Active Music Listening Interfaces

Other works

# Masataka Goto

National Institute of Advanced Industrial  
Science and Technology

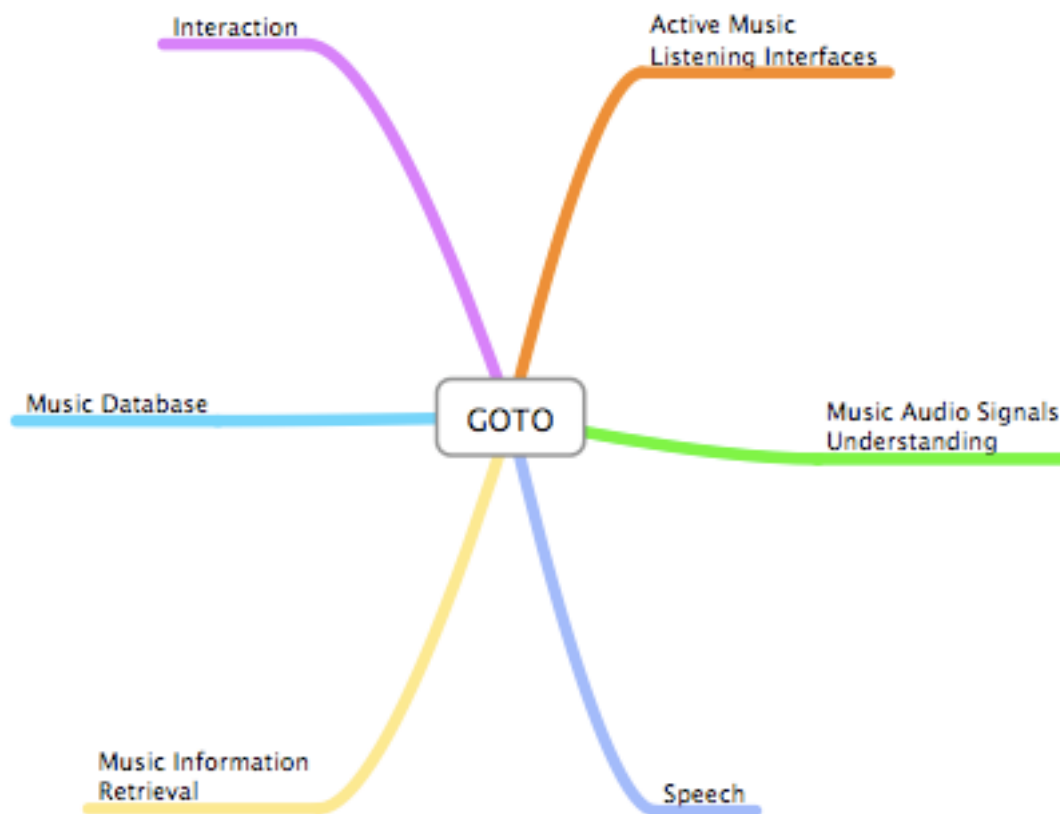
Information Technology Research Institute

Leader of Media Interaction Group

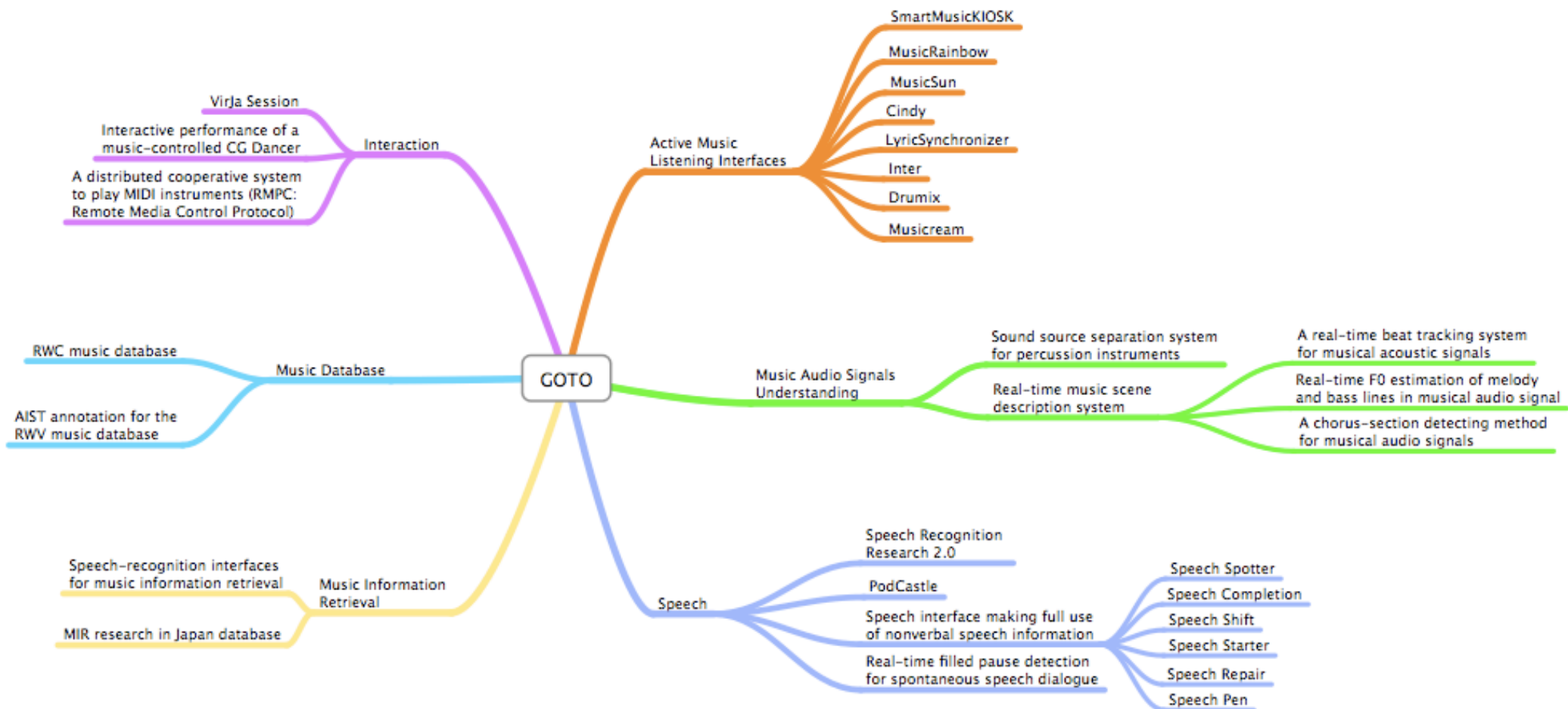
24 Awards

co-General Chair ISMIR 2009

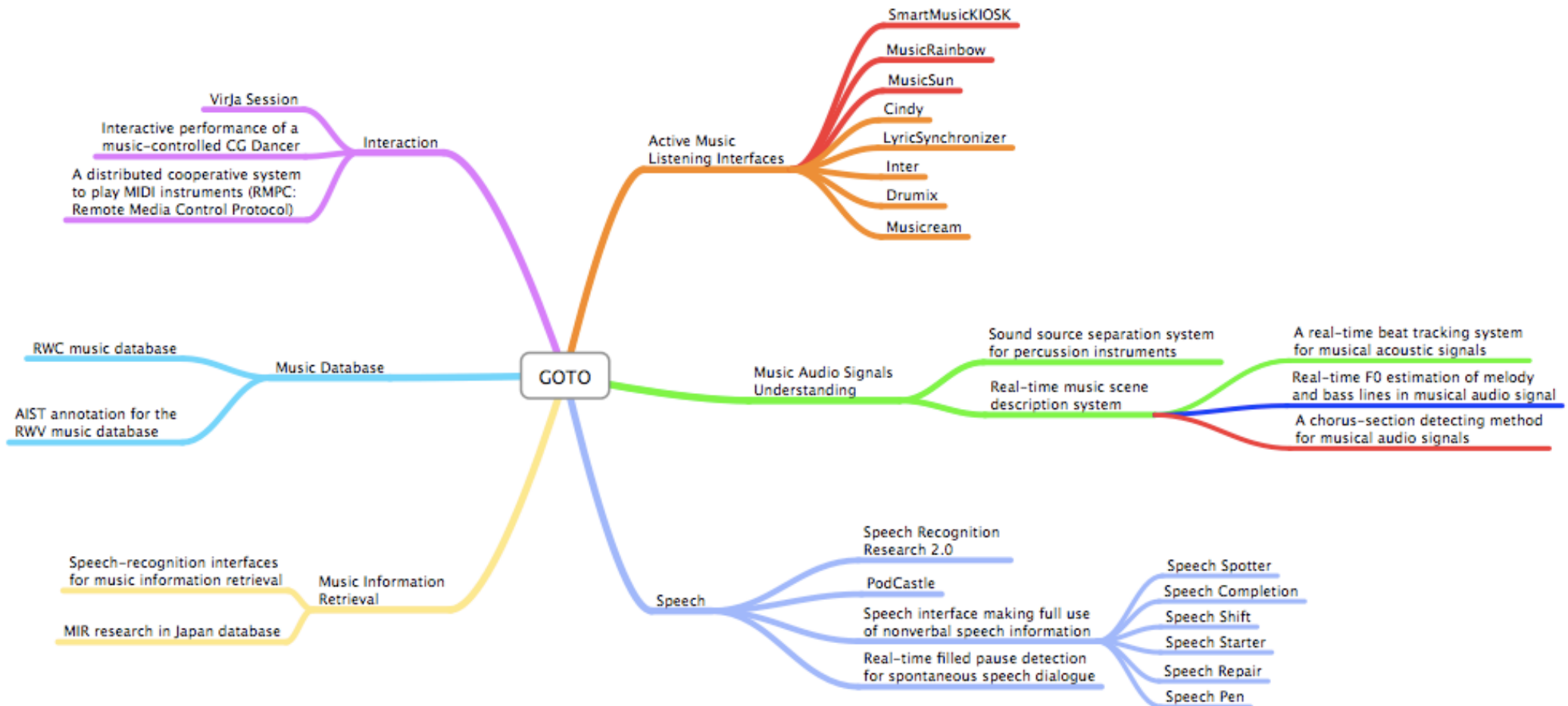
# Research Field



# Research Field



# Research Field



# Music Audio Signal Understanding

Starting point for future developments

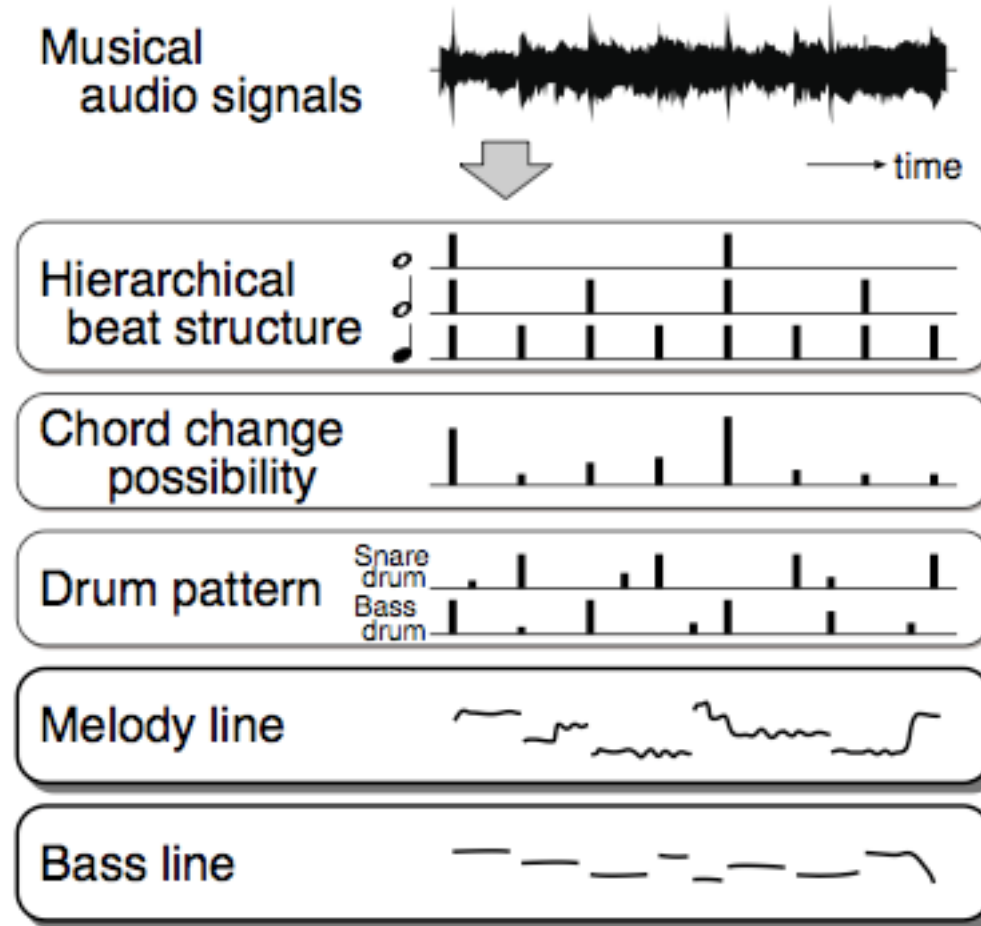
Enrich music listening experience by deepening  
people understanding of music

Novel techniques for automatic music understanding  
based on signal processing

Music Scene Description System

PreFEst – RefraiD

# Music Scene Description System



Goto, M. 1999. A real-time music scene description system: detecting melody and bass lines in audio signals. In *Working Notes of the Workshop on Computational Auditory Scene Analysis*.



# PreFEst

PRE Dominant F0 estimation

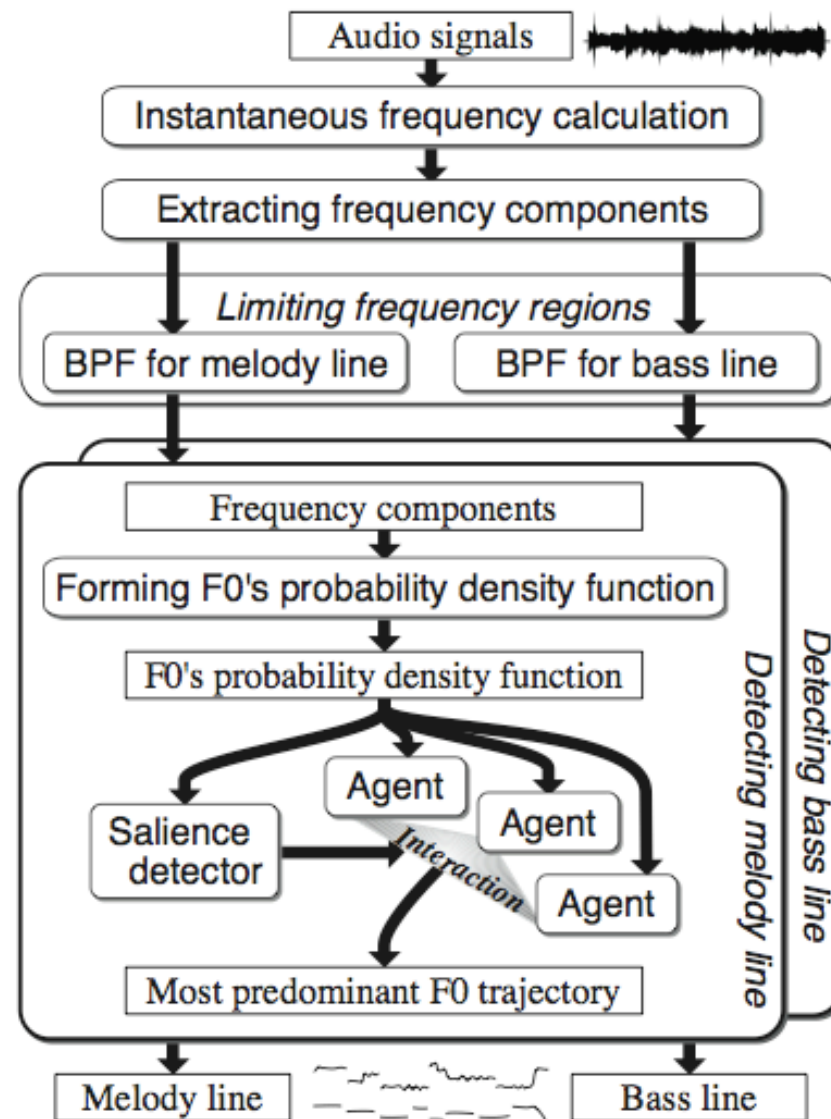
in real-time

of complex signals

i.e. melody and bass from commercial CDs

Assumptions: harmonic sound, melody in high and bass in low frequencies, lines temporally correlated

# PreFEst : method



Goto, M. 1999. A real-time music scene description system: detecting melody and bass lines in audio signals. In *Working Notes of the Workshop on Computational Auditory Scene Analysis*.

# PreFEst

title	genre	detection rates [%]	
		melody	bass
My Heart Will Go On (Celine Dion)	popular	88.7	92.2
Vision of Love (Mariah Carey)	popular	74.5	83.8
Always (Bon Jovi)	popular	92.4	84.5
Time Goes By (Every Little Thing)	popular	89.9	64.7
Spirit of Love (Sing Like Talking)	popular	85.9	80.0
<i>Hoshi no Furu Oka</i> (Misia)	popular	89.1	76.6
Scarborough Fair (Herbie Hancock)	jazz	93.6	53.4
Autumn Leaves (“Cannonball” Adderley)	jazz	81.2	86.2
On Green Dolphin Street (Miles Davis)	jazz	90.8	54.3
Violin Con. in D, Op. 35 (Tchaikovsky)	classical	78.6	77.6

Goto, M. 2000. A robust predominant-F0 estimation method for real-time detection of melody and bass lines in CD recordings. In *International Conference on Acoustics, Speech, and Signal Processing Proceedings*.

# RefrainD : Chorus Detection

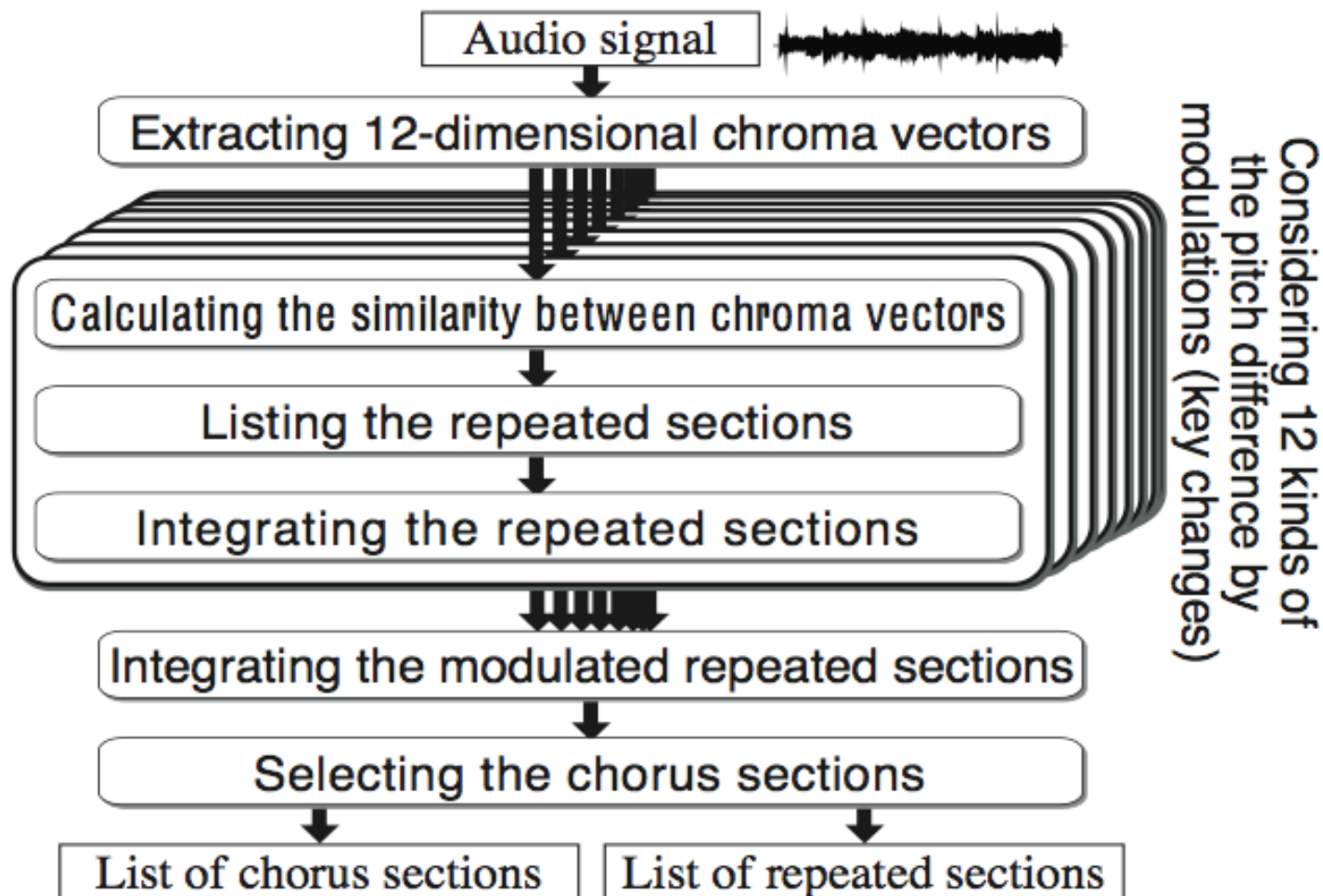
Identify the chorus of a song automatically

Estimate beginning and end points  
of repeated sections

Also detects modulated choruses

Assumptions: chorus probability is usually the most  
repeated section,

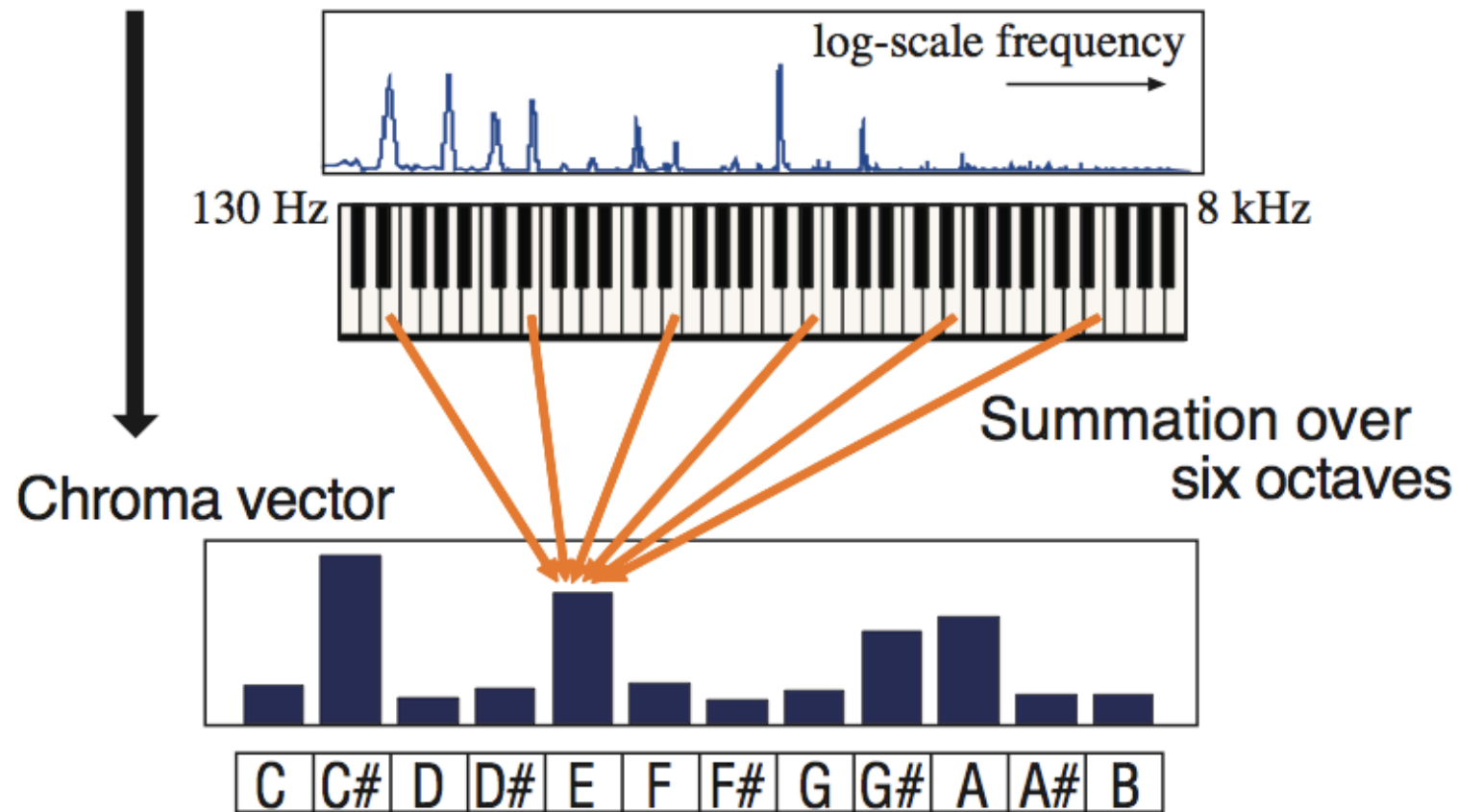
# RefraiD : method



Goto, M. 2003. A chorus-section detecting method for musical audio signals.  
*International Conference on Acoustics, Speech and Signal Processing.*

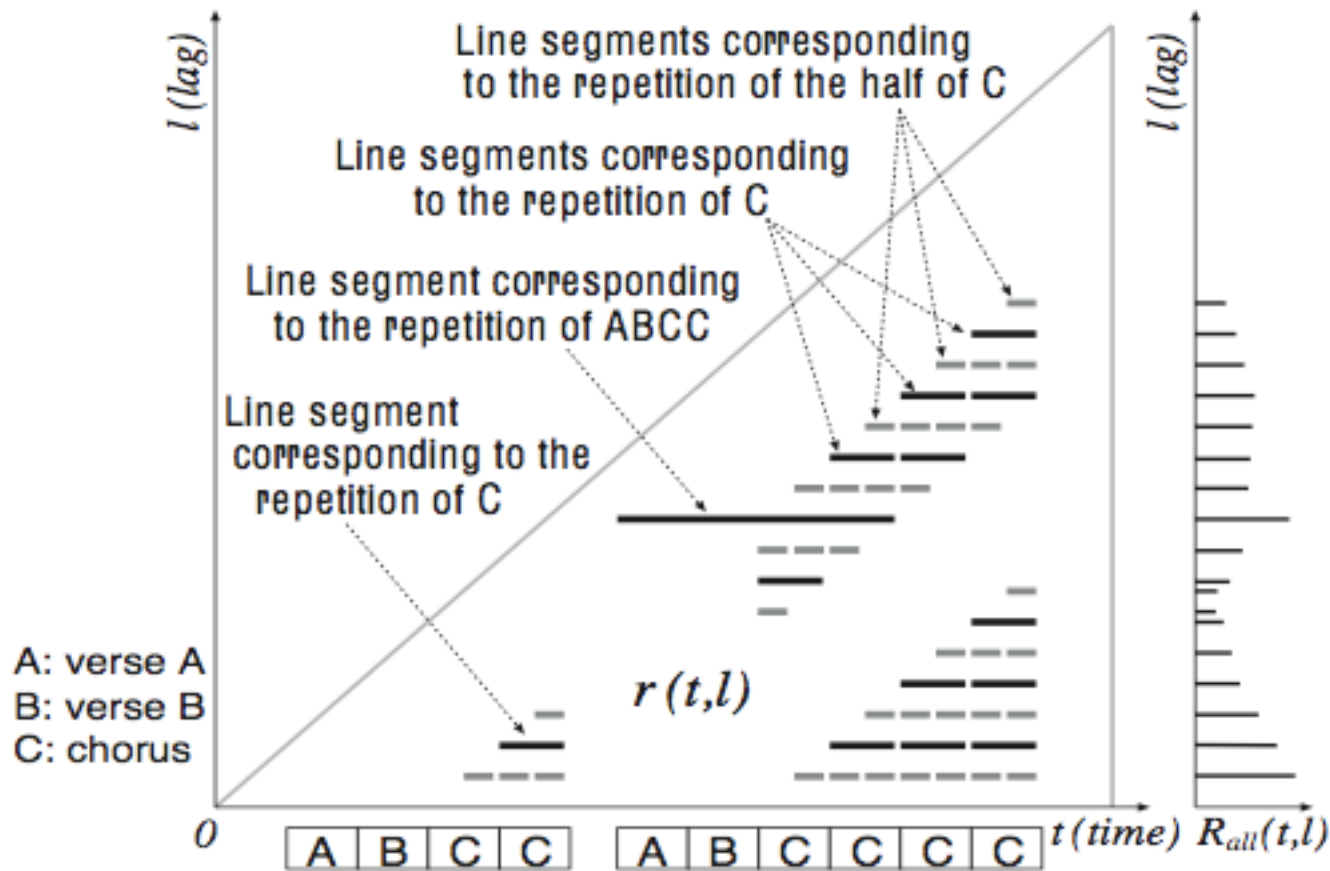
# RefraiD : method

STFT power spectrum



Goto, M. 2003. SmartMusicKiosk: Music listening station with chorus-search function. *Proceedings of the 16th Annual ACM Symposium on User Interface Software and Technology*

# RefraiD : method



Goto, M. 2003. SmartMusicKiosk: Music listening station with chorus-search function. *Proceedings of the 16th Annual ACM Symposium on User Interface Software and Technology*

# Active Music Listening Interfaces

Help people to understand music

Listening music through active interactions

Visual representations and  
editing capabilities of music

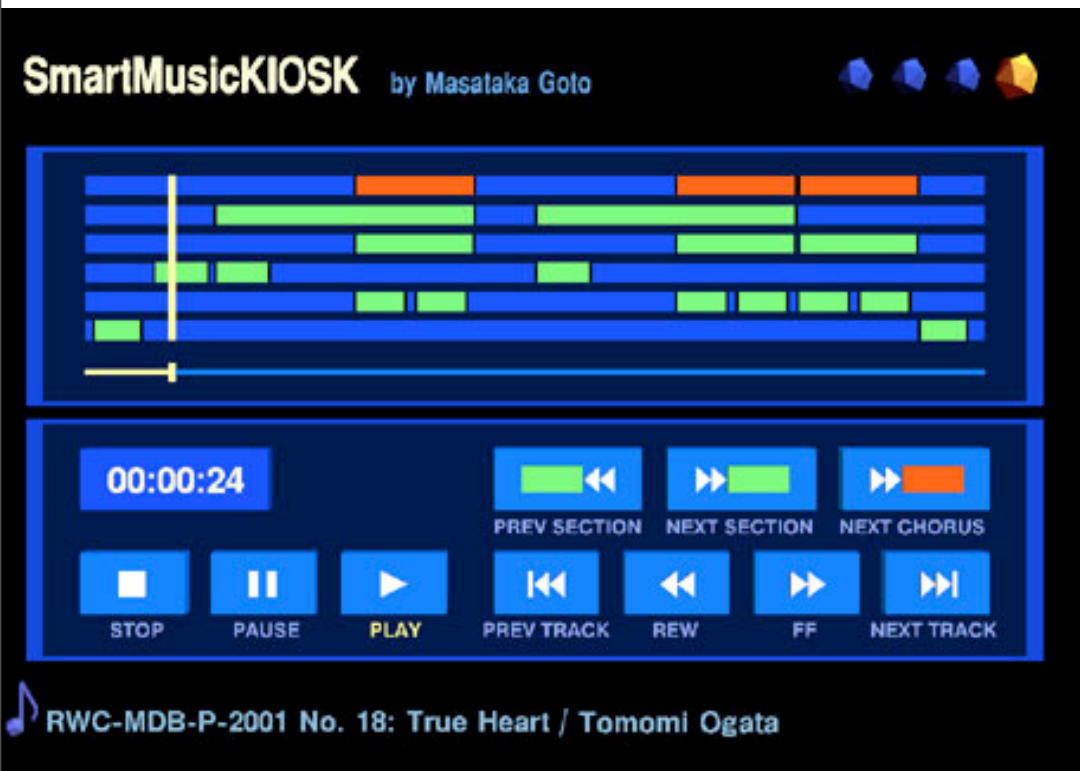
SmartMusicKIOSK

MusicRainbow



# SmartMusicKIOSK

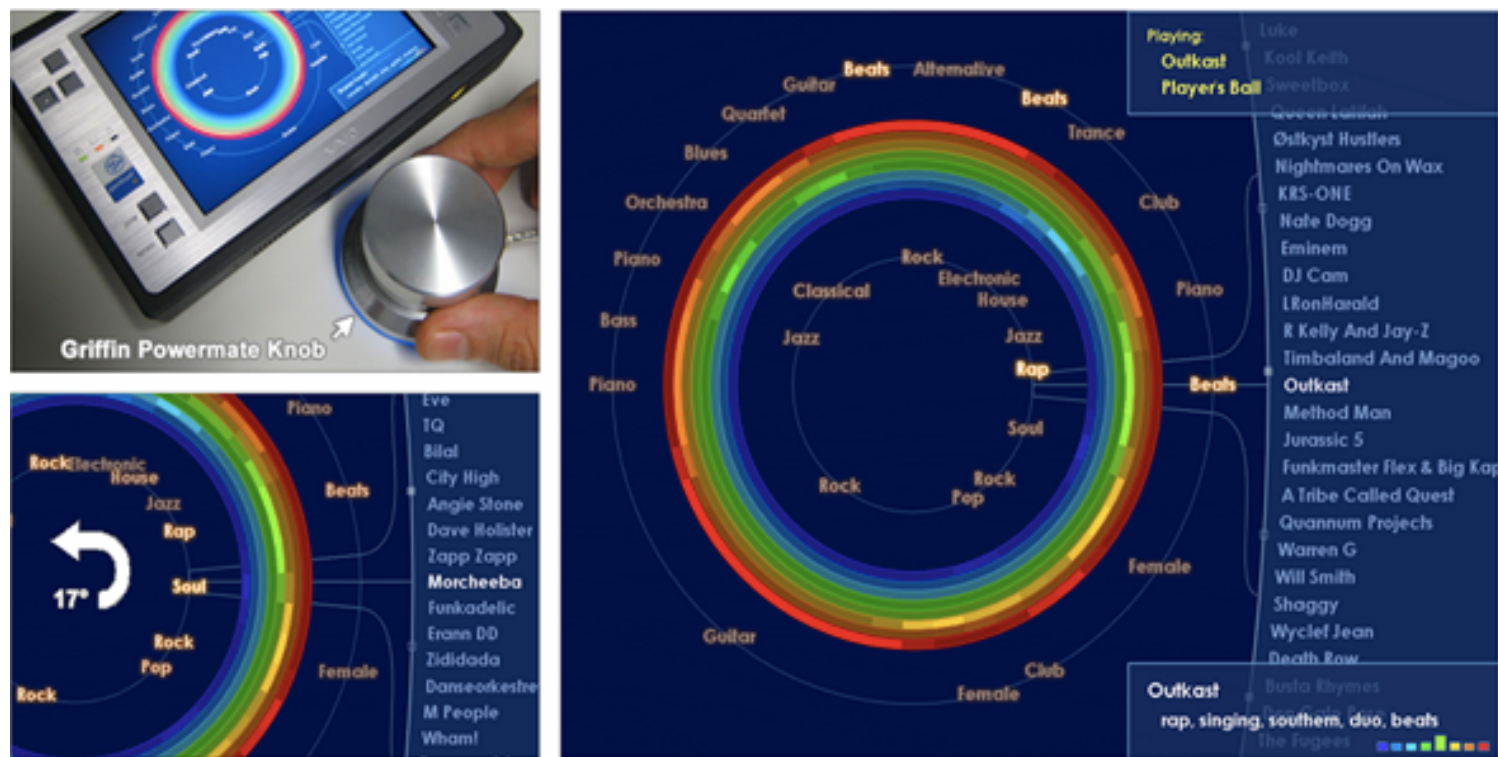
Playback interface for trial listening in music stores based on RefraiD



Dr. Masataka Goto's Home Page <http://staff.aist.go.jp/m.goto/>

# MusicRainbow

Interface for discovering similar artists. Uses audio-based similarities + labels from web mining + RefraiD



Dr. Masataka Goto's Home Page <http://staff.aist.go.jp/m.goto/>

# MusicRainbow

## MusicRainbow

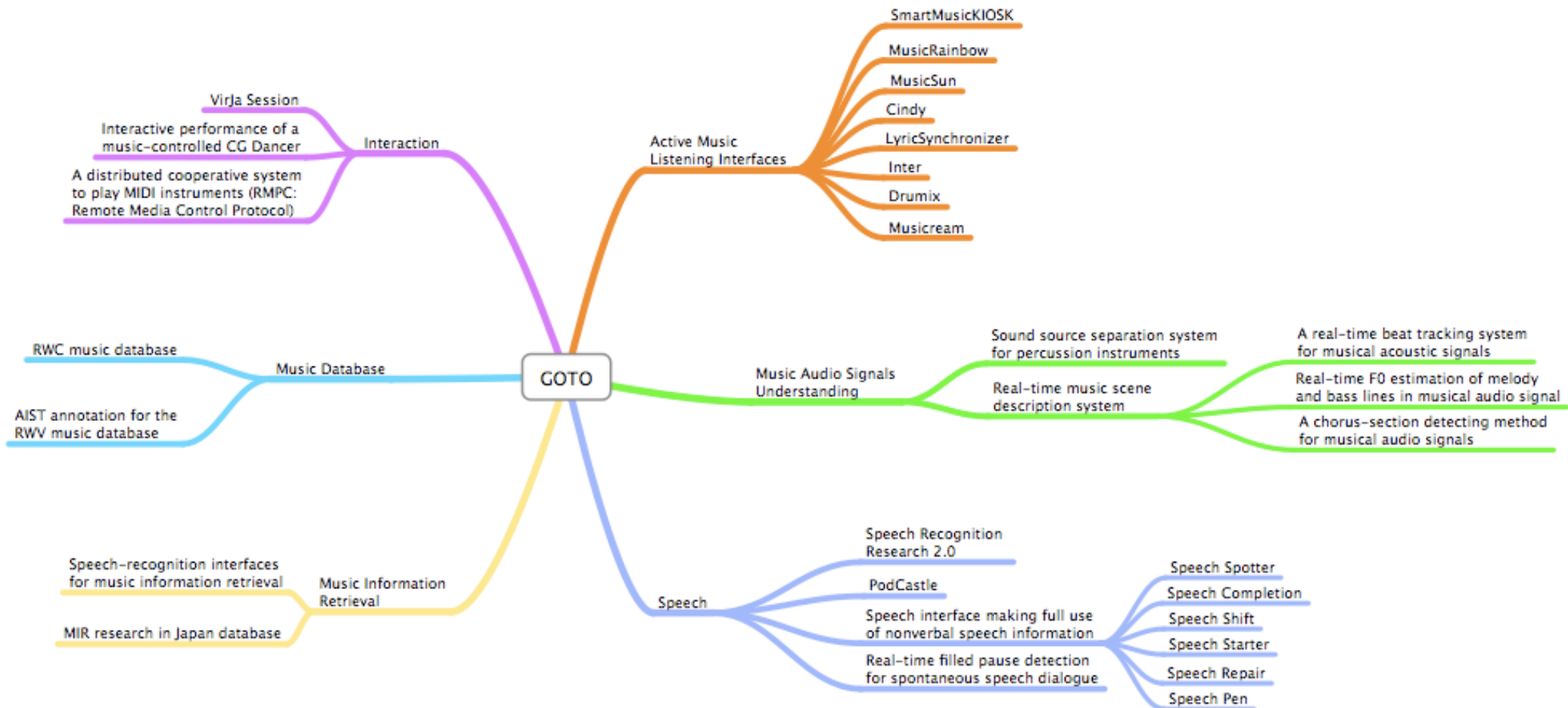
A New User Interface to Discover Artists

Elias Pampalk and Masataka Goto

National Institute of Industrial Science and Technology (AIST)  
CrestMuse Project

Dr. Masataka Goto's Home Page <http://staff.aist.go.jp/m.goto/>

# Other works by Goto



# Bibliography

[http://www.music.mcgill.ca/~gabriel/courses/mumt621/presentations/5\\_Goto\\_Work/annotated\\_bibliography.html](http://www.music.mcgill.ca/~gabriel/courses/mumt621/presentations/5_Goto_Work/annotated_bibliography.html)

Goto, M. 2001. An audio-based real-time beat tracking system for music with or without drum-sounds. *Journal of New Music Research*. 159–71.

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Goto, M. 2003. SmartMusicKIOSK: Music listening station with chorus-search function. *Proceedings of the 16th annual ACM Symposium on User Interface Software and Technology*. 31–40.

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Pampalk, E., and M. Goto. 2007. MusicSun: a new approach to artist recommendation. *Proceedings of the ISMIR International Conference on Music Information Retrieval*. 101–104.

Ogata, O., M. Goto, and K. Eto. 2007. Automatic transcription for a Web 2.0 service to search podcasts. *Proceedings of the 8th Annual Conference of the International Speech Communication Association*. 2617–20.

Dr. Masataka Goto's Home Page. <http://staff.aist.go.jp/m.goto/> (accessed November 4, 2009)

Thanks !



# Goto & Ich

