
Motif-Based Recognition of Folk Song Melodies - a First Step

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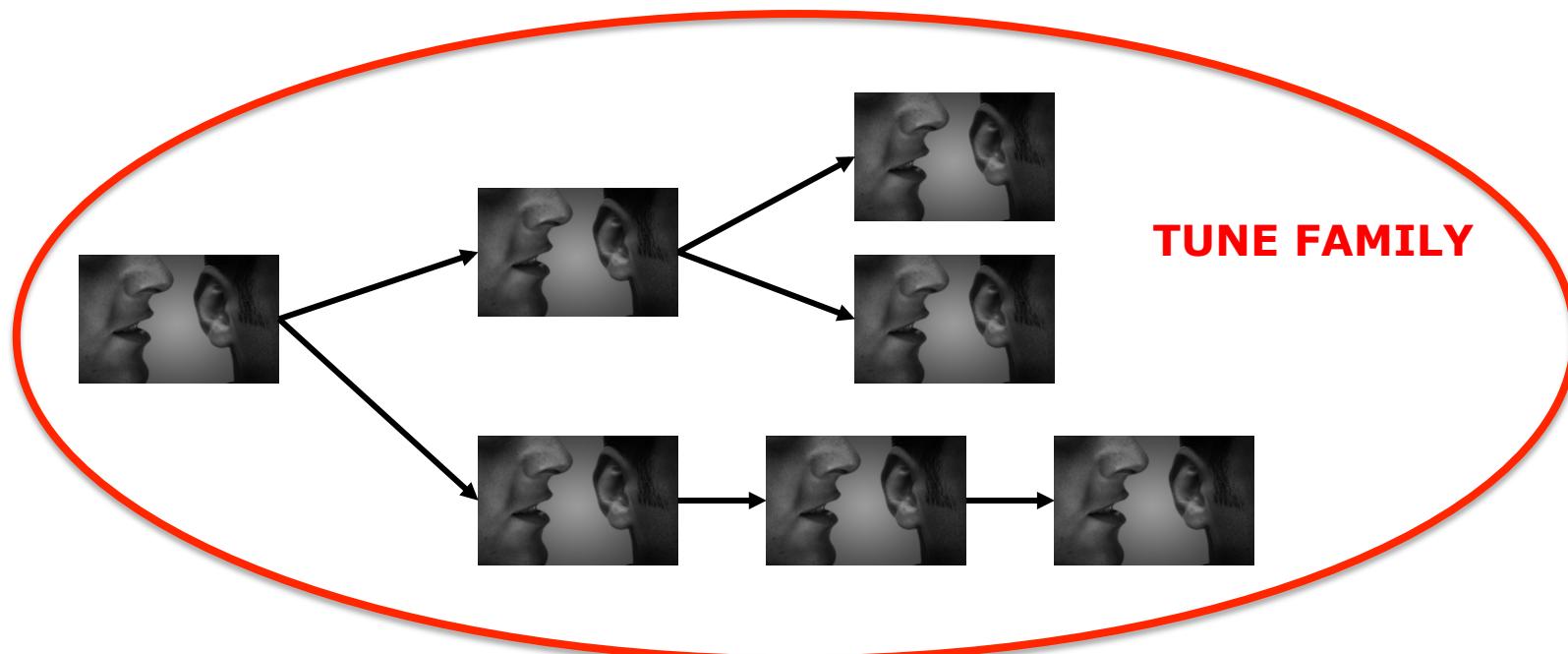


Folk Song Melodies



Folk Songs

Most important feature of folk songs: oral transmission



Folk Song Melodies



Music notation in G major, common time. Notes include quarter notes, eighth notes, and sixteenth notes. The lyrics are:

Komt vrien - den hoort een lied Wat duid' lijk zal ver - kla - ren



Music notation in G major, common time. Notes include quarter notes, eighth notes, and sixteenth notes. The lyrics are:

Vrien - den hoort een lied dat duid - lijk zal verkla - ren



Music notation in G major, common time. Notes include quarter notes, eighth notes, and sixteenth notes. The lyrics are:

Komt vrien-den hoort mijn lied. Wat duid - lijk zal ver - kla - ren



Music notation in G major, common time. Notes include quarter notes, eighth notes, and sixteenth notes. The lyrics are:

Komt vrien - den hoort een lied Dat ik duid' lijk zal ver - kla - ren

Folk Song Research

1900: Contest organized by Daniel Scheurleer:

„Welche ist die beste Methode, um Volks- und volkmässige Lieder nach ihrer melodischen (nicht textlichen) Beschaffenheit lexikalisch zu ordnen?“

Most important response by Ilmari Krohn: Cadence notes.

Folk Song Research

Record 70693 - Strophe 1

Komt vrien - den hoort een lied Dat ik duid' lijk zal ver - kla - ren
Wat een-maal is ge - schied Voor meer dandui - zend ja - ren
Toen oud en grijs Sta - vo - ren Nog bloeid' op Fries - landsgrond
En van zijn machtdeed ho - ren, Door heel de we - reld rond.

A A D G

Record 70360 - Strophe 1

Komt vrien-den hoort mijn lied. Wat duid - lijk zal ver - kla - ren
Wat een maal is ge - schied voor meer dan dui - zend ja - ren
Toen 't oud en grijs Sta - vo - ren nog bloeid' op Frieslands grond
En van zijn machtdeed ho - ren De he - le we - reld rond.

A G D G

Folk Song Research

Later contributions:

Hungary: Béla Bartók, Zoltán Kodály. Germany: Wolfgang Suppan, Wiegand Stief, Walter Wiora. USA: Bertrand Bronson, Samuel Bayard, and others.

Features they used to order melodies are e.g.,

- the number of phrases,
- the number of syllables in each phrase,
- the pitches of the cadence tones of the phrases,
- The pitches of accented tones
- Etc.

What can change?

Walter Wiora (1941): "Alles an der Beschaffenheit einer Melodie ist veränderlich".

1. changes in contour,
2. changes in tonality,
3. changes in rhythm,
4. insertion and deletion of parts,
5. changes in form,
6. changes in expression, and
7. demolition of the melody.

Andersson, 1a und i.



Alignment by Walter Wiora (1941)

Pool of Motifs

James Cowdery (1984): Extension of the tune-family concept

Folk Musicians do not compose new melodies as new instantiations of abstract archetypical airs, but relate new melodies to other concrete melodic material they know.

1. “Outlining” principle: global contour is similar
2. “Conjoining” principle: parts correspond, parts differ
3. “Recombining” principle: melodies from the same “Pool of Motifs”

Collection



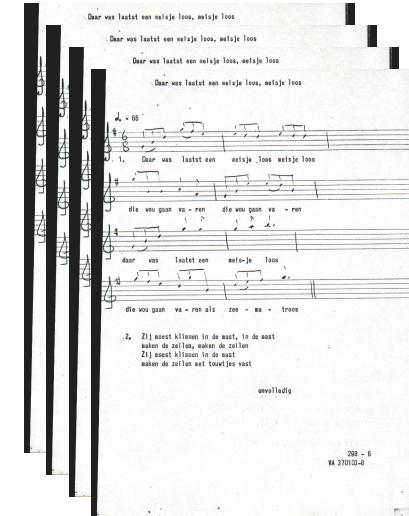
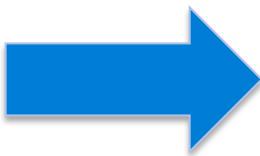
At the Meertens Institute (Amsterdam):

Onder de groene linde: c. 7000 recordings.

Recorded 1950s – 1980s by Will Scheepers and Ate Doornbosch.



Collection



! NLB004456_01.wce

Meta	Signature	Score	Header	Footer	Comments	Excel	Script		
r4	r4	g4 Het voe --	g2 der	g2 hoort	d4 den	f2 e --	e4 zel	d2. toe	
a'4 ghees --	a sel	bes en	c2 last	bes4 daer	g be --	a2 ne --	g2. ven		
r4	r4	g4 Den	g2 knecht	g4 dat	g2 hy	d4 hem	f2 ar --	e4 beyt	d2. moe
a'4 die	a sy	bes hem	c2 broot	bes4 ock	g ghe --	a2 ghe --	g2. ven		

Lilypond Output Logs PDF

Begin End All

```
version "2.8.2"
mBreak = { \bar "" \break }
x = { \once \override NoteHead #'style = #'cross }
\let gl=\glissando
ficta = { \once \set suggestAccidentals = ##t }
sb = { \breath }
fine = { \once \override Score.RehearsalMark #'self-alignment-X = #1 \mark \markup {\italic{Fine}} }
```

Update from Excel Update All Drawer



~ 7500 melodies

Retrieval of Folk Song Melodies

2006 – 2010 : WITCHCRAFT Project (NWO CATCH Program)

Project aim: A retrieval engine for folk song melodies.

Collaboration of Meertens Institute & Utrecht University

Project Leader: Frans Wiering

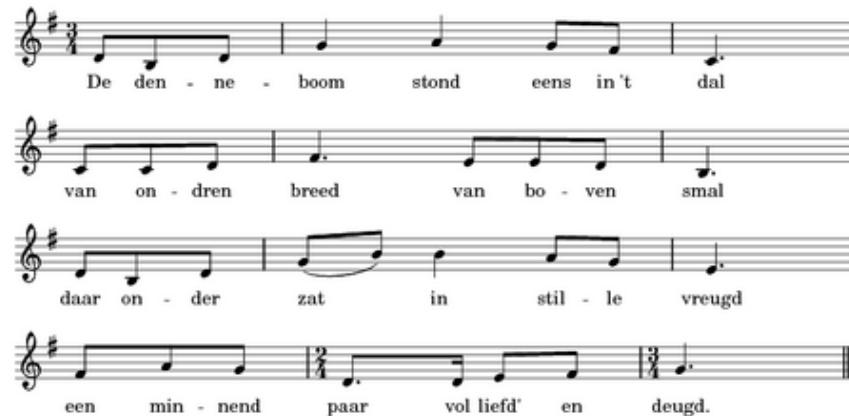
Post. Doc.: Anja Volk

AiO: Peter van Kranenburg

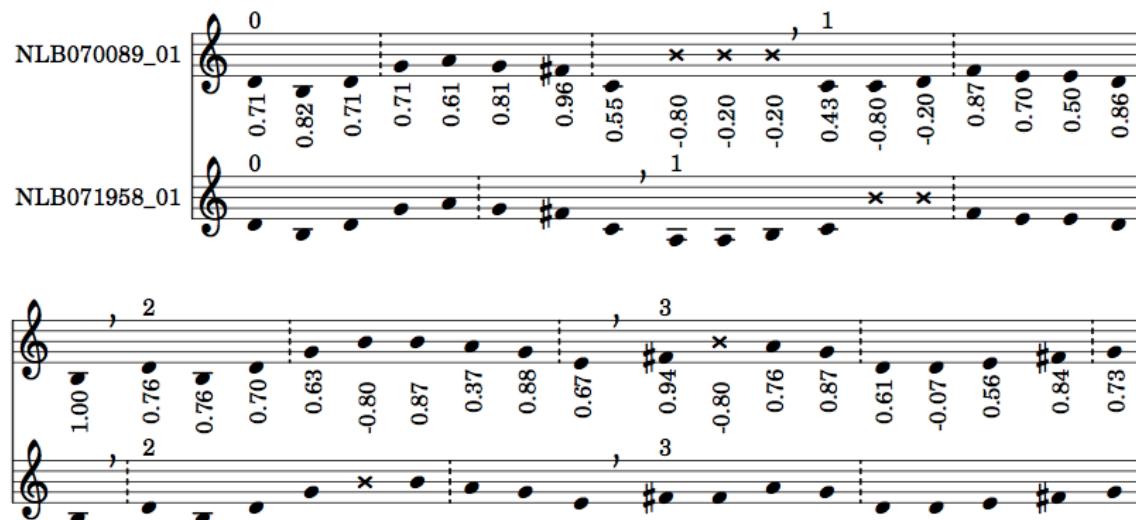
Programmer: Jörg Garbers

WITCHCRAFT-Project: Alignment

Record 70089 - Strophe 1



Record 71958 - Strophe 1



Dutch Song Database: Example

<http://www.liederenbank.nl/liedpresentatie.php?zoek=73946&lan=nl&wc=true>

Dutch Song Database: Example

The screenshot shows a web browser window for the Dutch Song Database. The URL in the address bar is www.liederenbank.nl/liedpresentatie.php?zoek=73946&lan=en&wc=true. The page title is "Dutch Song Database". A search bar at the top includes fields for "search", "AND", "all words", and "sort by year". Below the search bar is a red-bordered area containing a painting of two people singing and the text "Dutch Song Database stanza search".

The main content area displays a musical score for a song. The score consists of four staves of music in G major (two sharps) and common time (indicated by a '8'). The lyrics are written below each staff:

1. Daar was laatst een meisje loos meisje loos
die wou gaan va - ren die wou gaan va - ren
2. daar was laatst een meisje loos
die wou gaan va - ren als zee - ma - troos

A red oval highlights the link "find similar melodies" located next to the text "all songs with this text (91 songs & extra informatie)".

At the bottom of the page, the URL <http://www.liederenbank.nl/image.php?recordid=73946> is visible.



Dutch Song Database: Example

Dutch Song Database

www.liederenbank.nl/resultaatlijst.php?recordids=73946,72754,74104,72607,743

engine based on the WITCHCRAFT prototype.

1-30 of 97 first next 30 last map

Daar was laatst een meisje loos meisje loos
OPN OGL 29806: recording Gees 1967

Het was laatst op een zomerdag
OPN OGL 21934: recording Rockanje 1959

Het was op een oudejaarsavond laat avond laat
OPN OGL 30819: recording Groningen 1968

Er was een ruiter al met zijn meid
OPN OGL 21210: recording Onderdendam 1965

Dicht bij de Leek en daaromtrent
OPN OGL 32415: recording Rottevalle 1968

Daar woonde een meisje op het land op het land
OPN OGL 31305: recording Nieuwe Pekela 1968

Dichter bij Nijveenstermond omtrent -mond omtrent
OPN OGL 41106: recording Nieuw-Dordrecht 1973

mp3
transcr.

The screenshot shows a window titled "Dutch Song Database" displaying a list of songs from the Liederbank website. Each song entry includes the title, recording details (e.g., OPN OGL number, recording location, year), and two musical notation snippets. Each snippet is labeled with a "mp3" and "transcr." link. The interface is designed to look like a Mac OS X application, with a toolbar at the top and a sidebar on the left containing navigation links like "first", "next 30", "last", and "map".

WITCHCRAFT-Project: Annotations

The collection specialists from the Meertens Institute annotated similarities in 360 melodies from 26 tune families.

A

Record 70532 - Strophe 1

Lie - ve schip - per vaar mij o - ver
Naar het gind - se dorp - je heen;
Ik zal u een hals - snoer ge - ven,
En een kos - te lij - ke steen

B

Record 134480 - Strophe 1

Lie - ve schip - per vaar mij o - ver
Naar het gind - se dorp - je heen;
Ik zal u een hals - snoer ge - ven
En een kos - te lij - ken steen

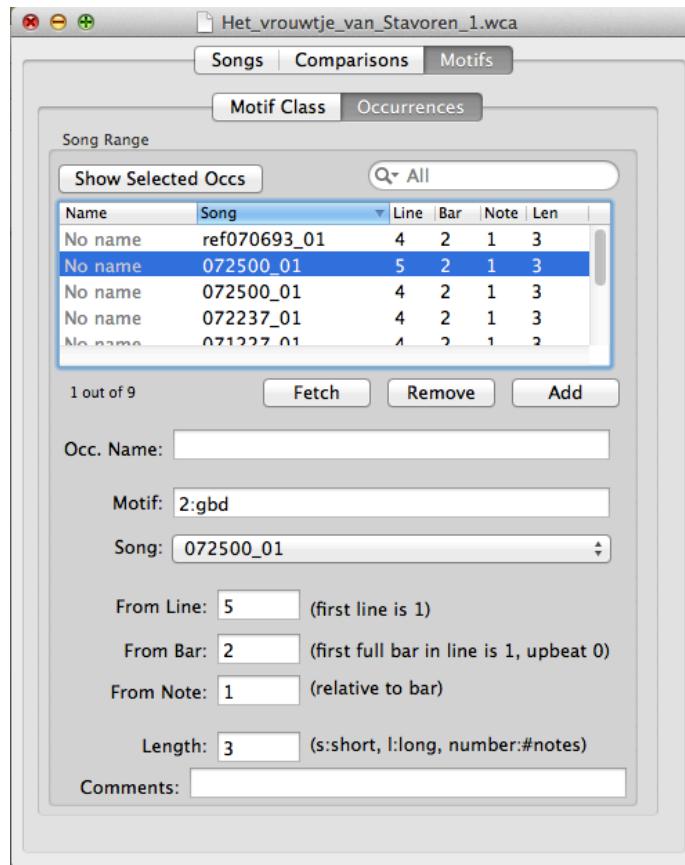
Global Annotations		Local Annotations			
		Phrase from A	Phrase from B	Rhythm	Contour
Global Contour	1	1	1	2	2
Global Rhythm		2	2	1	1
Motifs	2	3	3	2	0
Lyrics	2	4	4	1	1

WITCHCRAFT-Project: Annotations

	<i>absolute values</i>			<i>values in %</i>			<i>doubts in %</i>	<i>classification key in %</i>
	0	1	2	0	1	2		
Rhythm/global	9	62	143	4.2	29.0	66.8	3.3	22.4
Rhythm/local	87	491	1069	5.3	29.8	64.9	1.0	0
Contour/global	6	116	211	1.8	34.8	63.4	3.6	0.6
Contour/local	120	623	904	7.3	37.8	54.9	1.0	0
Motifs	8	31	293	2.4	9.3	88.3	0	9.3
Lyrics	34	10	245	11.8	3.5	84.8	0	2.4

Annotations of Motifs

We asked the collection specialists to annotate the occurrences of “characteristic motifs” in each of the 26 tune families.
Total: c. 1400 motifs in c. 100 motif classes



Annotation of Motifs

Record 70360 - Strophe 1

Komt vrien-den hoort mijn lied.

Record 71227 - Strophe 1

Hoort vrien-den hoort een lied.
Wat een-maal is ge-schied.

Record 72237 - Strophe 1

Komt vrien-den hoort een lied, Wat duid' lijk zal ver - kla - ren
Wat een-maal is ge-schied. Voor meer dan dui - zend ja - ren
Toen 'toud en rijk Sta - vo - ren nog bloeid' op Frieslands grond
En van z'n machtdeed ho - ren. Tot heel de we - reld rond.

Toen oud en grijs Sta - vo - ren Nog bloeid' op Fries - landsgrond
En van zijn machtdeed ho - ren, door heel de we - reld rond.

En van zijn machtdeed ho - ren door heel het we - reld - rond.

Tunes & Tales Project

2011 – 2016 : Tunes & Tales Project (KNAW Computational Humanities Program)

Aim: Model oral transmission of folk songs and folk tales

Approach: Analyse songs and tales in their constituent motifs (“building blocks”)

Collaboration: Meertens Institute, UvA, UU, RU, UT, Fryske Ak.

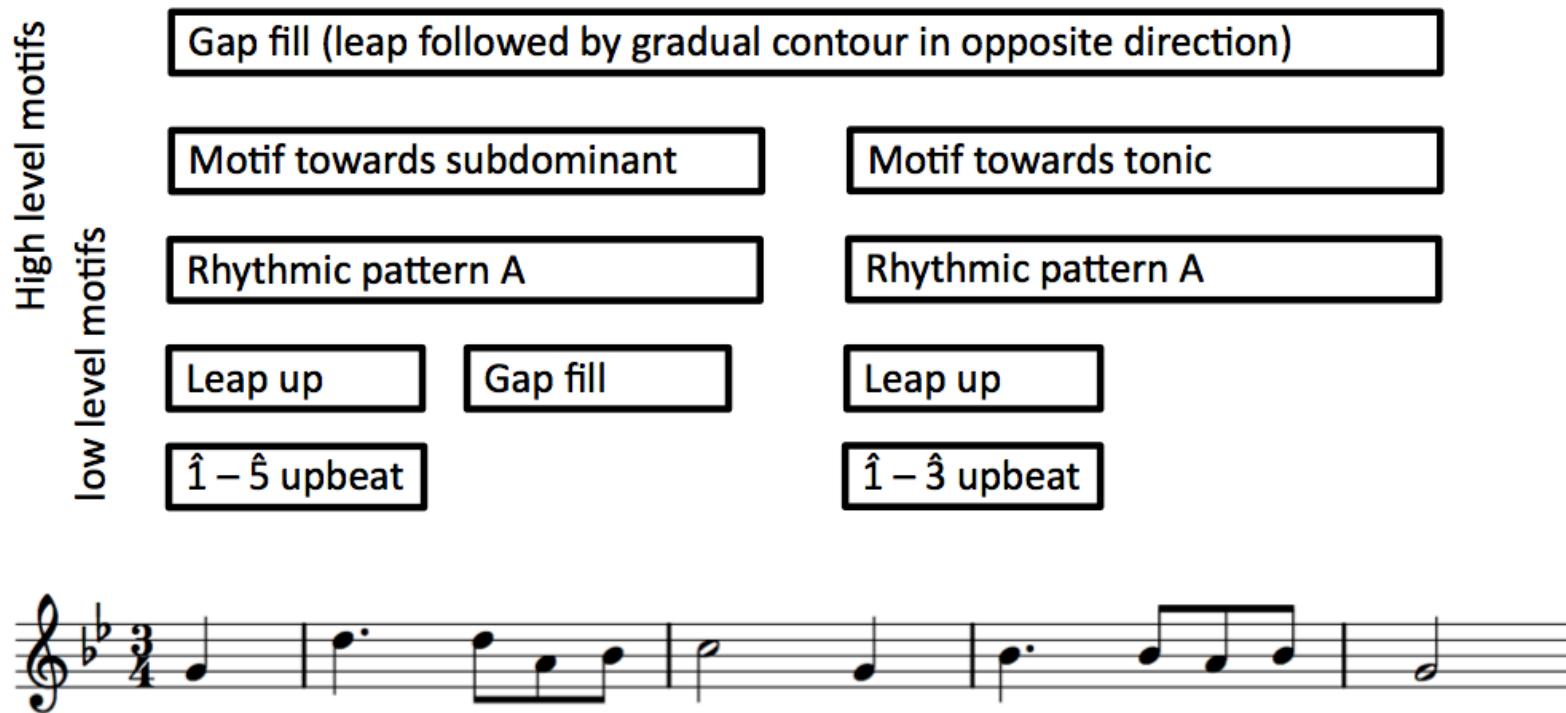
Project Leaders: Louis Grijp, Theo Meder

Post. Doc.: Peter van Kranenburg

AiO Tunes: Berit Janssen, AiO Tales: Folgert Karsdorp

Tunes & Tales Project

Approach: Represent melodies and tales as (layered) sequence of ‘motifs’ (building blocks).



Tunes & Tales Project

Approach: Represent melodies and tales as (layered) sequence of 'motifs' (building blocks).

folktale type: ATU 333, Red Riding Hood					
	K2000 Hypocrites	Z18 Formulistic conversations	F910 Extraordinary swallowings	Q410 Capital punishment	
			F911 Person (animal) swallowed without killing		
	K2011 Wolf poses as 'grandmother' and kills child	Z18.1 What makes your ears so big?	F911.3 Animal swallows man (not fatally)	F913 Victims rescued from swallower's belly	Q426 Wolf cut open and filled with stones as punishment
"Once upon a time there was a little girl called ... And they all lived happily ever after." (i.e. the entire fairy tale text of Little Red Riding Hood)					

Inventory of Annotated Motifs

Rhythmic Syncope

Big Leap

Repercussion

Long Notes

Unaccented Final

Ends on Third

V-I Upbeat

Ascending Line

Tritone Leap

Descending Line

Broken Chord

Top Note

Leaps

Bottom Note

Leap before Final

Detected Motifs: Example

NLB072237_01

A musical score for three staves. The first staff starts with a VIUpbeat (labeled 0) followed by a BigLeap. The second staff begins with a Leaps (labeled 1). The third staff starts with a Repercussion (labeled 2). The labels are placed above specific notes or groups of notes.

0 VIUpbeat BigLeap
Repercussion
BrokenChord
Leaps
BigLeap
TopNote
BottomNote
1 Repercussion

2 Leaps
TopNote
BigLeap
VIUpbeat
Repercussion
AscendingLine
BrokenChord
Leaps
AscendingLine
Repercussion
BigLeap
Leaps
LeapBeforeFinal
3

Detected Motifs: Example

NLB072237_01

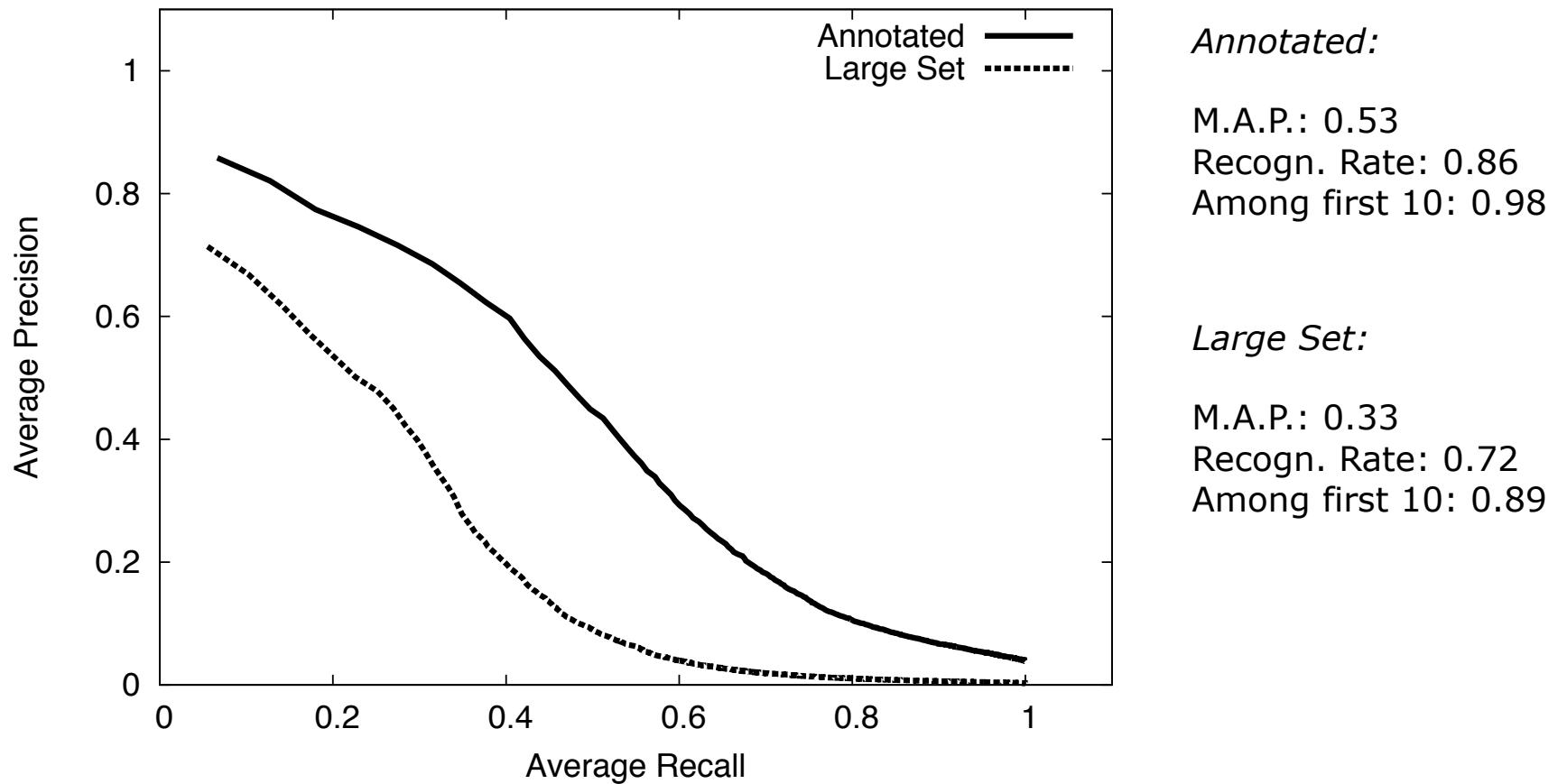
1. VIUpbeat
2. BigLeap
3. Repercussion, BrokenChord
4. Leaps
5. BigLeap
6. BigLeap
7. TopNote
8. Repercussion
9. TopNote
10. Leaps
11. VIUpbeat
12. BigLeap, BottomNote
13. Repercussion
14. AscendingLine
15. Repercussion
16. Leaps, BrokenChord
17. BigLeap, AscendingLine
18. Leaps
19. LeapBeforeFinal

Retrieval (Using Alignment)

We take each of the 360 melodies as “query”, and compute the ranked lists using alignment score.

Relevant documents: members of the same tune family as the query melody.

Retrieval Results (Using Alignment)



To Conclude

- Detected motifs contribute to the recognition of melodies.
- With the detected motifs we are not able to retrieve all melodies from a tune family.

Future Work:

- Automatically detect melodic meaningful motifs.
- Model transmission of songs in terms of changes that occur to (layered) sequences of motifs.

End
