Human-Centered Approach to the Development of Tools for Music Analysis

The purpose of this survey is to understand which elements of statistical analysis users find useful for analyzing a corpus of folk melodies.
The results of the survey are intended to help select diagrams that are clear and easy to interpret, as well as to design an analytical user interface that combines independent diagrams to contextualize the analysis.
The survey is divided into three sections:
Section 1 – Information about the respondents (academic background)
Section 2 – Analysis of the tune corpus
Section 3 – Analysis of individual tunes
Important Note: Some of the diagrams you will see in this survey are interactive (in the interface not in a questionnaire) – you can modify their display (e.g., summarize different features) and view more detailed information by hovering over the elements with your mouse. These diagrams are labeled "INT".

Section 1 – Information About the Respondents

1. Academic Background: Please select your highest academic qualification: *

Professor (Prof.)
Doctorate (Dr)
PhD student
Engineer (Eng.)
Master's degree
Bachelor's degree
Bachelor's student

2. Field of Professional Qualification: Please select your academic or professional qualification field (you can select more than one). *

Music Theory
Musicology
Music Education
Instrumental Studies
Vocal Studies
Classical Composition
Computer Music Composition
Electronic Music
Music Technology/Music Informatics

Other

3. Rate how familiar you are with musical analysis:

Traditional analysis (e.g., harmony analysis, form analysis)

Computer-assisted analysis using symbolic data

Computer-assisted analysis using audio data

Section 2 – Analysis of the Tune Corpus

4. When working with a large music-text corpus, how important are the following criteria for identifying interesting subsets of songs (sets) within the corpus?

	1 (not important at all)	2	3	4	5 (very important)

Region where the melody was popular

Social function of the melody

Tonic of the melody (the note on which the melody is based)

Melodic scale

Range (from the lowest to the highest note)

Meter

Presence of specific rhythmic values (e.g., triplets)

Most common rhythmic pattern of the melody

Number of notes

Length of the melody (e.g in measures)

Number of phrases

Transmission time of the melody

Key change within the melody

Other – please specify:

5. Rate on a scale from 1 to 5 how much you agree with the following statements regarding the use of text analysis in music analysis.

	1 (strongly disagree)	2	3	4	5 (strongly agree
I would use tunes with similar themes to create an analysis set.					
I would use tunes that convey similar emotions to create an analysis set.					
I would use keywords that appear in the tunes to create an analysis set.					

6. Each of the following diagrams shows summary information about the occurrence of rhythmic values in a subcorpus (Set1, Set2, Set3), with each subcorpus marked in a different color. Please rate on a scale from 1 to 5 how easy the diagrams are to understand.

Tree Chart (INT): In this diagram, the size of each box represents the frequency of a specific rhythmic value. It displays numerical information showing both the count and the percentage of each rhythmic value. (The percentage appears on an additional white label.)

1 2 3 4 5

1 (not clear at all)   5 (very clear)

Please explain why the impression of the diagram is not optimal for you. *

Bar Chart (INT): This diagram shows the count and percentage of each rhythmic value. (The percentage appears on an additional white label.) *

1 2 3 4 5

1 (not clear at all)   5 (very clear)

3

Please explain why the impression of the diagram is not optimal for you. *

Table: This diagram shows the count and percentage in separate columns for each rhythmic value. *

               1 2 3 4 5

1 (not clear at all)   5 (very clear)

Please explain why the impression of the diagram is not optimal for you. *

7. Each of the following diagrams shows cumulative information about the occurrence of intervals in a subcorpus (Set1, Set2, Set3). Each subcorpus is marked in a different color. Please rate the diagrams for their clarity.

Table *

               1 2 3 4 5

1 (not clear at all)   5 (very clear)

Please explain why the impression of the diagram is not optimal for you. *

Pie Chart (INT) – When hovering over the highlighted parts of the diagram, a label with information about the percentage of intervals in the subcorpora (Set1, Set2, Set3) is displayed. *

1 2 3 4 5

1 (not clear at all)   5 (very clear)

Please explain why the impression of the diagram is not optimal for you. *

Bar Chart (INT) – When hovering over the highlighted parts of the diagram, a label with information about the percentage of intervals in the subcorpora (Set1, Set2, Set3) is displayed. *

1 2 3 4 5

1 (not clear at all)   5 (very clear)

Please explain why the impression of the diagram is not optimal for you. *

8. The following diagrams show the number of intervals in a subcorpus (Set1, Set2, Set3) as well as their direction. Please rate their clarity.

The diagram (INT) displays numerical information in a bar chart format, with percentage information appearing when hovering over the bars. *

1 2 3 4 5

1 (not clear at all)   5 (very clear)

In the diagram (INT), the intervals in ascending direction are displayed to the right of the value 1 and in descending direction to the left. *

1 2 3 4 5

1 (not clear at all)   5 (very clear)

Would you prefer to see this data in a different visual representation? If so, please describe it.

5

9. Rate how important you consider the following representations for the thematic comparison of tunes in the corpus and justify your answer.

Word cloud for each subcorpus (Set) – based on the frequency of word occurrences. *

1 2 3 4 5

1 (not important at all)   5 (very important)

Please justify your answer. *

Bigram Analysis (INT) – Identification of the most frequent two-word combinations in texts from a subcorpus (set) for selected subcorpora separately. For example, the list of the 20 most frequent two-word sequences. *

1 2 3 4 5

1 (not important at all)   5 (very important)

Please justify your answer. *

Sentiment analysis is used to determine whether the lyrics of the songs in the subcorpus are positive, negative, or neutral. *

1 2 3 4 5

1 (not important at all)   5 (very important)

Please justify your answer. *

Sentiment analysis that shows the proportion of individual emotions in the selected subcorpora. *

1 2 3 4 5

1 (not important at all)   5 (very important)

Please justify your answer. *

Suggest an alternative analysis, if desired.

10. (MULTIPLECHOICE) What type of bigrams would you want to use for analyzing a text corpus? *

Bigrams, e.g., the 10 most frequent word pairs that occur in each subcorpus individually based on their frequency.

Bigrams that repeat in different corporas.

11. During the survey, you have encountered some charts that enable the analysis of text corpora. Please rate on a scale from 1 to 5 how much you agree with the following statements.

	1 (I don't agree at all)	2	3	4	5 (I completely agree.)
I would like to learn more about it.					
Computer-assisted text analysis seems to offer a broad perspective.					

I would like to use digital tools (including in other graphical representations) in my own research.

I would continue the analysis only WITHOUT digital tools.

Section 3 – Analysis of individual tunes.

12. Rate on a scale from 1 to 5 how important you consider the following information when analyzing individual tunes:

	1 (not important at all)	2	3	4	5 (very important)
Tonic of the melody (the note on which the melody is based)					
Ambitus (range of the melody)					
Scale degrees					
Number of phrases					
Number of measures					
Maximum pitch					
Minimum pitch					
How often each pitch occurs					
Cadenz					
The shortest duration					

Other – please specify:

13. A piano roll is a simplified form of music notation from which one can derive the rhythmic and melodic progression of a piece. The following diagrams (A, B [INT], C) represent this information in slightly different ways.

Sort the diagrams according to the presentation and the provided information that you would prefer to use (starting with the one that best suits your needs). Please enter the order according to the assigned letter symbols. *

14. The following diagram shows melodic bigrams, i.e., the preceding and following scale degrees along with their frequency (number in parentheses). Additional symbols before the numbers on the right side of the diagram represent (v) – indicating that the scale degree is approached from below, or (^) – from above. Please rate how understandable the diagram is for you.

*

                1 2 3 4 5

1 (not clear at all)   5 (very clear)

Please explain why the impression of the diagram is not optimal for you. *

15. The following diagrams represent the rhythmic density in a folk tune. Please rate their significance on a scale from 1 to 5.

Bar chart: X-axis: metrical position, Y-axis: Duration (given in number of sixteenth notes). *

             1 2 3 4 5

1 (not important at all)   5 (very important)

Please justify your answer: *

Density diagram (INT) – the darker, the more attacks (number of notes) in the measure. *

1 2 3 4 5

Please justify your answer: *

1 (not important at all)   5 (very important)

Linear diagram (INT): Y-axis: Number of notes, X-axis: Measure number. *
1 2 3 4 5
1 (not important at all)   5 (very important)

Please justify your answer: *

Would you prefer to see the rhythmic progression in a different format, or should other features be considered? Suggest an alternative analysis, if desired.

16.
Please suggest possible combinations of rhythmic and melodic parameters that you would use for the analysis of folk melodies.
Note: Below, you will find two lists with typical elements of rhythmic and melodic analysis. Please suggest a combination of elements from the different lists or propose your own solution.

Rhythmic analysis: Frequency of occurrence of a specific rhythmic value, metric position of the occurrence of individual rhythmic values, rhythmic accents in the measure, rhythmic progression of the entire song, metric positions of accented notes (in the measure or throughout the entire melody), rhythmic bigrams, rhythmic patterns, occurrence of dotted rhythms, irregular rhythms.
Melodic analysis: Pitch, bigrams of melodic progression, frequency of occurrence of a specific pitch or pitch class, ambitus, interval sequence.

Please enter: Element of rhythmic analysis + element of melodic analysis (multiple suggestions can be entered). *

17. During the investigation, you have learned about various types of diagrams. In the following section, different diagrams are combined, meaning they can be filtered together, and the numerical information will be automatically recalculated. Please rate on a scale from 1 to 5, which pairs of diagrams you would use for analysis.

Diagram of the rhythmic progression coupled with a table of the rhythmic pattern. *

1 2 3 4 5

1 (I wouldn't use it.)   5 (I would definitely use it.)

Please justify your answer. *

Diagram of note duration distribution coupled with a diagram of note duration distribution per beat (the latter indicates the position of the selected durations within the measure). *

1 2 3 4 5

1 (I wouldn't use it.)   5 (I would definitely use it.)

Please justify your answer. *

18. Please suggest other possible combined diagrams that were not mentioned in this survey but that you would use for the analysis of folk melodies.
Note: Below you will find a list of previously seen diagrams. Select a pair that you would like to combine or

suggest another solution.

<u>Examples of diagrams</u> for a single tune or a corpus: proportion of pitch classes, proportion of intervals, rhythmic bigrams, melodic bigrams, textual bigrams, metrical position, proportion of rhythmic values, rhythmic density, melodic-rhythmic progression (piano roll), proportion of scale tones, proportion of rhythmic patterns, proportion of emotions in the text."

Please enter: Diagram 1 + Diagram 2 (multiple suggestions can be entered). *

19. The survey presented many diagrams that visually represent the results of statistical music analysis in an interactive way on two levels – corpus analysis and close reading analysis. Please rate on a scale from 1 to 5 how much you agree with the following statements about analysis using digital tools.

	1 (I completely disagree.)	2	3	4	5 (I completely agree.)
I would like to learn more about it.					
The analysis seems to offer a broad perspective.					
I would use digital tools in my research/educational work.					
This analysis is too complicated in terms of content.					
This analysis is too complicated graphically.					