

MTO 29.1 Examples: Lavengood and Williams, The Common Cold

(Note: audio, video, and other interactive examples are only available online)
<https://www.mtosmt.org/issues/mto.23.29.1/mto.23.29.1.lavengoodwilliams.php>

Example 1. Measures 1–3 of “Pifa” from Handel’s *Messiah*. This music exhibits key facets of the pastoral topic: simple harmony and melody, compound meter, slow tempo, and scoring for strings.

The image shows a musical score for measures 1-3 of "Pifa" from Handel's *Messiah*. The score is written for five string parts: Violin I, Violin II, Violin III, Viola, and Violoncello + Contrabass. The tempo is marked as $\text{♩} = 60$. The time signature is 12/8. The key signature is one flat (B-flat major). The score consists of three measures. In the first measure, the Violin I, II, and III parts play a melody of eighth notes, while the Viola and Violoncello + Contrabass parts play a bass line of eighth notes. In the second and third measures, the Violin I, II, and III parts play a melody of eighth notes with trills, while the Viola and Violoncello + Contrabass parts play a bass line of eighth notes. The trills are marked with $[tr]$.

Example 2. "Pewter City" in *Pokémon Red/Blue* (1996, Nintendo GameBoy) is representative of the town topic in video game music

Antecedent HC

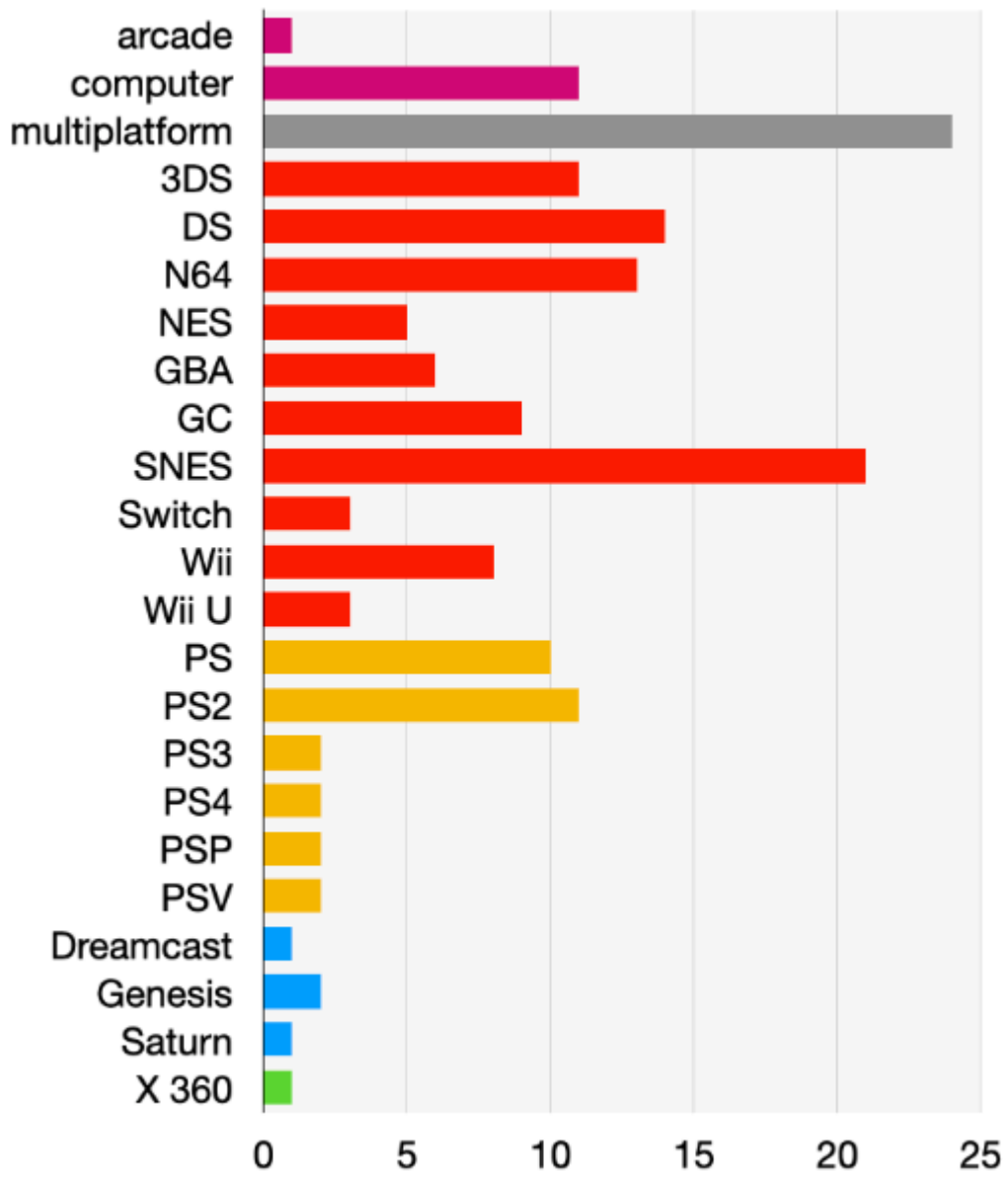
♩ = 132

The Antecedent section consists of four measures in 4/4 time with a tempo of 132. It features four staves: Pulse synth (top), Pulse synth, Saw synth, and Hi-hat (bottom). The key signature has three sharps (F#, C#, G#). The melody in the top Pulse synth staff starts with a quarter note G4, followed by quarter notes A4 and B4, then a half note C5. The second measure contains a sixteenth-note triplet of G4, A4, and B4, followed by a quarter note C5. The third measure has a quarter note B4, a quarter note A4, and a half note G4. The fourth measure has a quarter note G4, a quarter note F#, and a half note E4. The second Pulse synth staff plays a steady eighth-note accompaniment. The Saw synth staff plays a similar eighth-note accompaniment with occasional rests. The Hi-hat staff shows a consistent pattern of eighth notes with 'x' marks indicating hits.

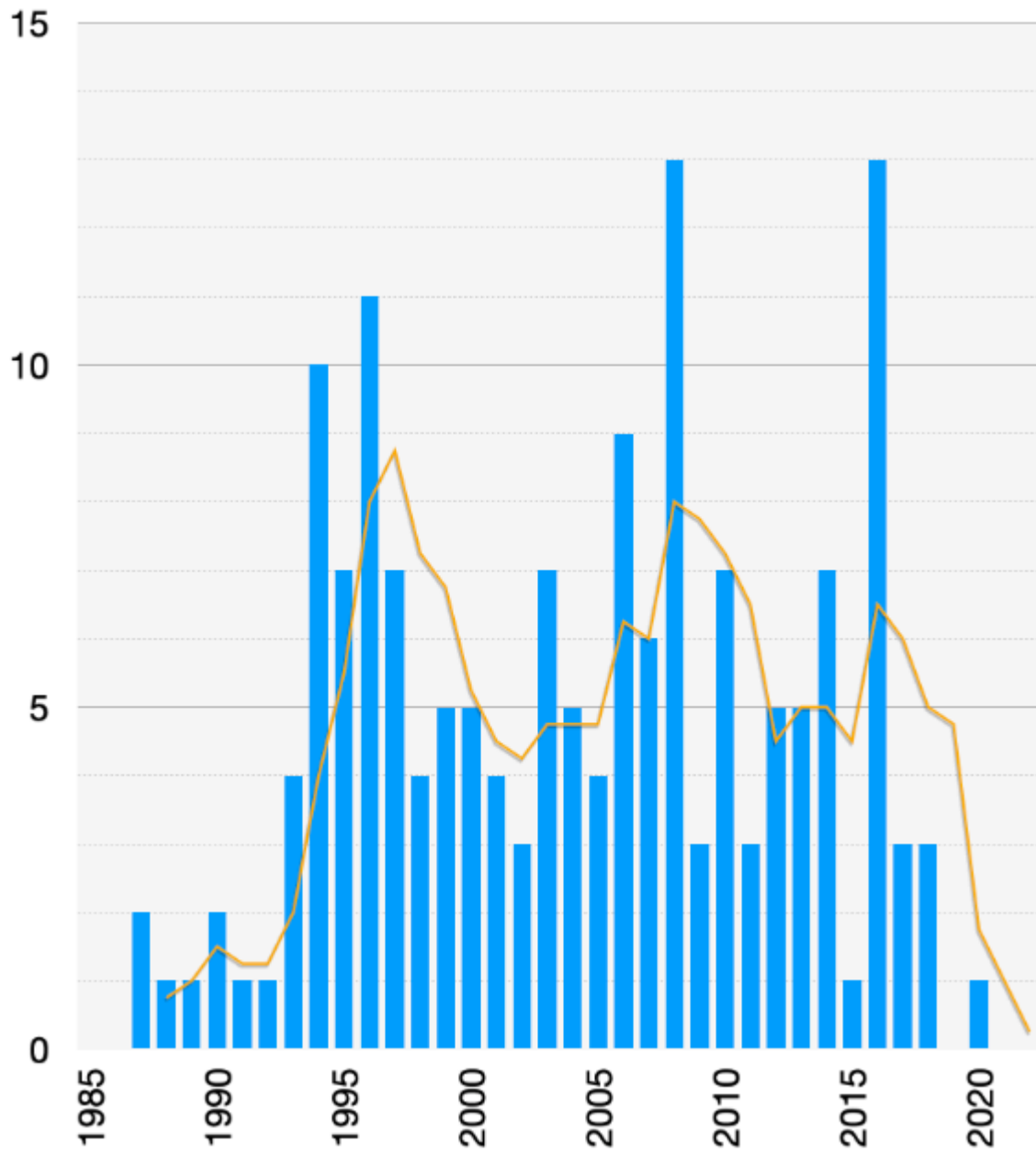
Consequent PAC

The Consequent section consists of four measures in 4/4 time. It features four staves: Pulse synth (top), Pulse synth, Saw synth, and Hi-hat (bottom). The key signature has three sharps (F#, C#, G#). The melody in the top Pulse synth staff starts with a quarter note G4, followed by quarter notes A4 and B4, then a half note C5. The second measure contains a sixteenth-note triplet of G4, A4, and B4, followed by a quarter note C5. The third measure has a quarter note B4, a quarter note A4, and a half note G4. The fourth measure has a quarter note G4, a quarter note F#, and a half note E4. The second Pulse synth staff plays a steady eighth-note accompaniment. The Saw synth staff plays a similar eighth-note accompaniment with occasional rests. The Hi-hat staff shows a consistent pattern of eighth notes with 'x' marks indicating hits, with a slash through the staff in the final two measures.

Example 3. Dataset divided by gaming platform



Example 4. Dataset divided by year



Example 5. "Toy Day" from *Animal Crossing: New Horizons* (2020), annotated with tags that would be entered in our dataset for this excerpt

The image displays a musical score for the piece "Toy Day" from the video game *Animal Crossing: New Horizons*. The score is arranged in a grand staff format with eight staves, each representing a different instrument: Flugelhorn, Trombone, Accordion, Vibraphone, Celesta, Electric Piano, Guitar, and Sleigh Bells. The key signature is B-flat major (two flats) and the time signature is 4/4. The tempo is marked as quarter note = 108. The score includes various musical notations such as dynamics (mf, mp, mf), articulation (accents, slurs), and performance instructions like "let ring" for the sleigh bells. A blue box highlights the first measure of the Flugelhorn part, and another blue box highlights a specific rhythmic pattern in the guitar part. Annotations include a list of instrument tags at the top, a measure number "#4" at the bottom left, and a tag "#arpeggiated" pointing to the guitar part. A final list of tags is located at the bottom right.

#trumpet, #trombone, #accordion, #vibraphone, #celesta, #electric_piano, #guitar, #sleigh_bells

Flugelhorn mf

Trombone mp

Accordion

Vibraphone mf

Celesta mf

Electric Piano mp mf

Guitar mf mp

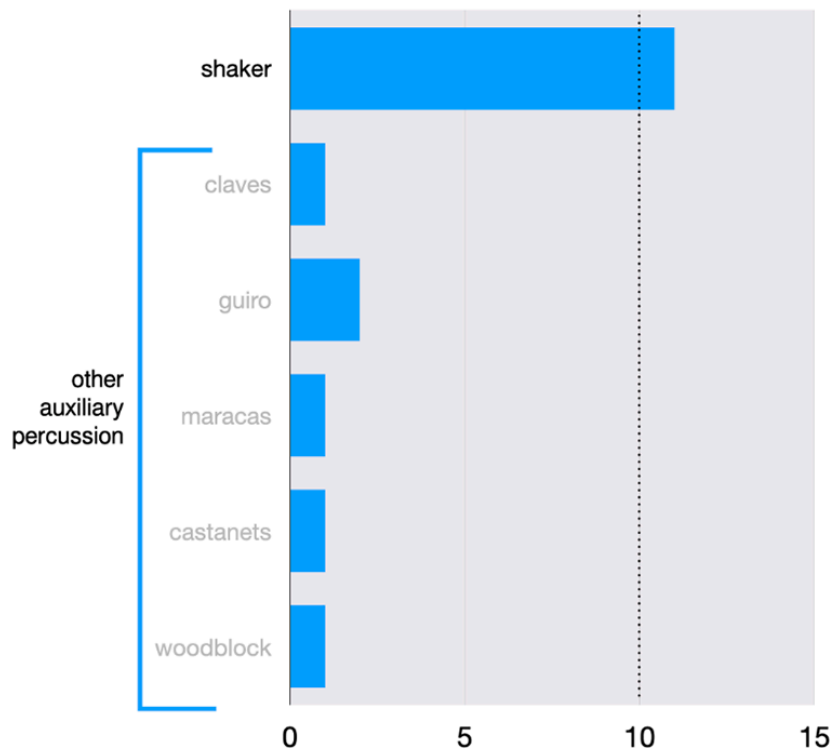
Sleigh Bells mf let ring

#4

#arpeggiated

#no_drums, #no_bass, #christmas, #major

Example 6. Illustration of meta-tag exploratory analysis, and of grouping certain lower-level tags into a catch-all tag (#other_auxiliary_percussion)



Example 7. Library of musical features used as tags in the database

- | | | | |
|-----------------------------|---------------------|----------------------------|------------------------|
| #12 | | #metallic_percussion | #plucked_strings |
| #2 | | #celesta | #acoustic_guitar |
| #3 | #Christmas | #chimes | #harp |
| #4 | #chromatic_mediants | #crotales | #pizz_strings |
| #6 | #detuned | #cymbals | #other_plucked_strings |
| #80s | #drums | #glockenspiel | #rock |
| #accordion | #hand_drums | #sleigh_bells | #shuffle |
| #arpeggiated | #snare | #tambourine | #strings |
| #auxiliary_percussion | #other_drums | #triangle | #sweeps |
| #shaker | #drumset | #vibraphone | #synth |
| #other_auxiliary_percussion | #EDM | #wind_chimes | #synth_lead |
| #bass | #electric_guitar | #other_metallic_percussion | #other_synth |
| #acoustic_bass | #electric_organ | #military | #train |
| #electric_bass | #electric_piano | #minor_iv | #violin |
| #synth_bass | #glockenflute | #minorish | #vocals |
| #brass | #heavy_reverb | #no_bass | #treble_vocals |
| #horn | #lament | #no_drums | #other_vocals |
| #trumpet | #light_drums | #no_tonality | #woodwinds |
| #other_brass | #low_reverb | #orchestra | #clarinet |
| #breakbeat | #majorish | #organ | #flute |
| #chiptune | #marimba | #piano | #oboe |
| | | | #pan_flute |
| | | | #other_woodwinds |
| | | | #wind_effect |
| | | | #xylophone |

Example 8. An illustration of how preprocessing transforms the data in stages. These tables use simplified sample data, rather than our actual dataset

a. Original format

Track	tag1	tag2	tag3	tag4
"White Land"	electric_piano	other_vocals	drumset	sleigh_bells
"Snowfield"	sleigh_bells	electric_piano		
"Ice Cavern"	synth_bass	crotales	other_vocals	sleigh_bells

b. Tidy

Track	Tag
"White Land"	electric_piano
"White Land"	other_vocals
"White Land"	drumset
"White Land"	sleigh_bells
"Snowfield"	sleigh_bells
"Snowfield"	electric_piano
"Ice Cavern"	synth_bass
"Ice Cavern"	crotales
"Ice Cavern"	other_vocals
"Ice Cavern"	sleigh_bells

c. Binarized

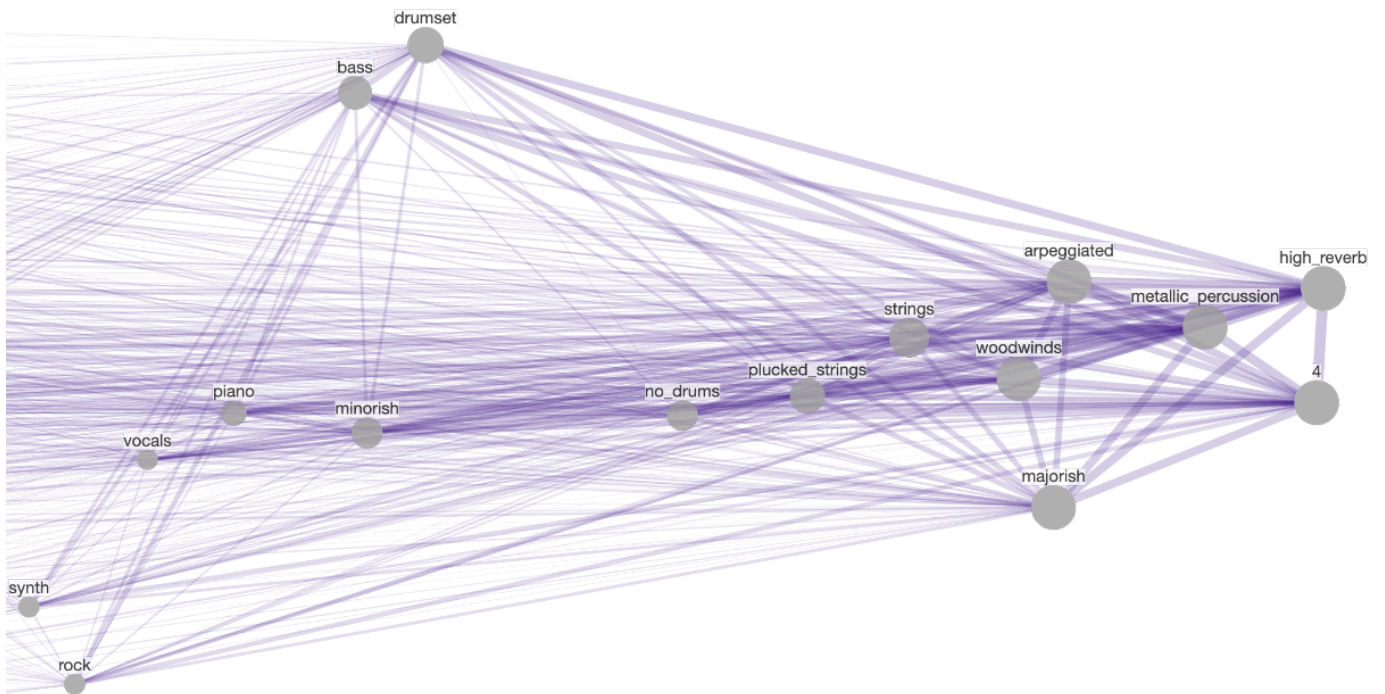
Track	electric_piano	other_vocals	drumset	sleigh_bells	synth_bass	crotales
"White Land"	1	1	1	1	0	0
"Snowfield"	1	0	0	1	0	0
"Ice Cavern"	0	1	0	1	1	1

d. Co-occurrence matrix

	electric_piano	other_vocals	drumset	sleigh_bells	synth_bass	crotales
electric_piano	2	1	1	2	0	0
other_vocals	1	2	1	2	1	1
drumset	1	1	1	1	0	0
sleigh_bells	2	2	1	3	1	1
synth_bass	0	1	0	1	1	1
crotales	0	1	0	1	1	1

Example 9. The central cluster of tags that represent winter's most important musical characteristics. Each tag (that is, each musical characteristic) is a node; two nodes are connected whenever an example exhibits both features. Size correlates to importance: larger nodes are more common tags, and thicker lines mean more examples had both connected tags.

[Open web app](#)



Example 10. Music for 5 p.m. from *Animal Crossing: New Horizons*, on sunny days (a) and on snowy days (b)

a. Swing 16ths

This musical score for sunny days (a) is in 4/4 time with a key signature of two sharps (F# and C#). It features five staves: Saw Synthesizer, Electric Guitar, Piano, Electric Bass, and Drumset. The Saw Synthesizer plays a melodic line with eighth and sixteenth notes. The Electric Guitar plays a rhythmic pattern of eighth notes. The Piano provides a harmonic accompaniment with chords. The Electric Bass plays a simple bass line. The Drumset features a swing feel with a consistent pattern of eighth notes.

b.

This musical score for snowy days (b) is in 4/4 time with a key signature of two sharps (F# and C#). It features six staves: Glockenspiel, Saw Synthesizer, Electric Guitar, Piano, Marimba, and Sleigh Bells. The Glockenspiel plays a melodic line with eighth and sixteenth notes. The Saw Synthesizer plays a melodic line with eighth and sixteenth notes. The Electric Guitar plays a rhythmic pattern of eighth notes. The Piano provides a harmonic accompaniment with chords. The Marimba plays a simple bass line. The Sleigh Bells play a simple bass line.

Example 11. "Frozen Hyrule" from *The Legend of Zelda: Four Swords* (2002, Nintendo GameBoy Advance) exhibits several of the musical features given in Example 9: an arpeggiated accompaniment (harp), an absence of drums, and use of metallic percussion (crotales and sleigh bells) and woodwinds (flute)

The image displays a musical score for the piece "Frozen Hyrule" from the video game *The Legend of Zelda: Four Swords*. The score is written in 4/4 time with a tempo of 120 beats per minute. It features five staves: Flute + Crotales, Harp, Strings, Sleigh Bells, and a grand staff (Piano/Vocal). The key signature is B-flat major (two flats). The Flute + Crotales part begins with a melodic line in the first measure, followed by a series of eighth notes. The Harp part provides an arpeggiated accompaniment, consisting of a continuous sequence of eighth notes. The Strings part is marked with a forte (f) dynamic and features a series of eighth notes. The Sleigh Bells part is marked with a piano (pp) dynamic and features a series of eighth notes. The grand staff part features a series of eighth notes in the right hand and a series of eighth notes in the left hand. The score is divided into three measures, each containing a different instrument part.

Video Example 1. "Iceman Stage" from *Mega Man* (1987, Nintendo Entertainment System)
sacrifices one of four available monophonic lines in order to create a reverb effect

Musical score for "Iceman Stage" from *Mega Man*. The score is in 4/4 time with a tempo of 120. It features four staves: Pulse Synth 1, Pulse Synth 2, Triangle Synth, and Hi-hat. Pulse Synth 1 has a "wide vib." marking. Pulse Synth 2 has an "echo of Pulse 1" marking. Triangle Synth has a triplet marking. Hi-hat has a triplet marking.

Example 12. A rough transcription and reduction of several examples with arpeggiated accompaniments

a. *Bravely Default*, "Land of Immortality"

Musical score for "Land of Immortality" from *Bravely Default*. It shows a piano accompaniment with a treble and bass staff. The top voice is transposed down one octave for visual clarity. The score is in 4/4 time.

b. *Final Fantasy VII*, "Buried in the Snow"

Musical score for "Buried in the Snow" from *Final Fantasy VII*. It shows a piano accompaniment with a treble and bass staff. The score is in 3/4 time.

c. *Secret of Mana*, "A Bell is Tolling"
top voice transposed down one octave for visual clarity

Musical score for "A Bell is Tolling" from *Secret of Mana*. It shows a piano accompaniment with a treble and bass staff. The top voice is transposed down one octave for visual clarity. The score is in 4/4 time.

d. *Stardew Valley*, "Marimba of Frozen Bones"

Musical score for "Marimba of Frozen Bones" from *Stardew Valley*. It shows a piano accompaniment with a treble and bass staff. The score is in 4/4 time.

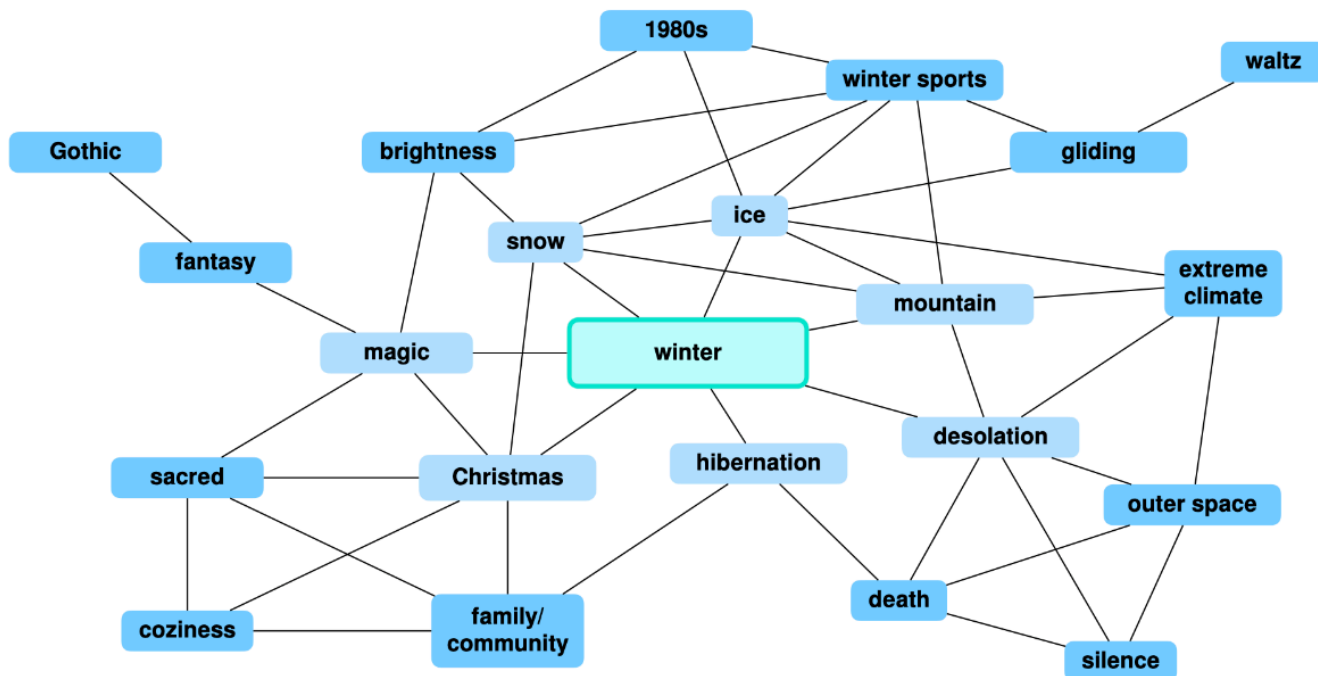
e. *Gradius Gaiden*, "Snowfield"
 top voice transposed up one octave for visual clarity



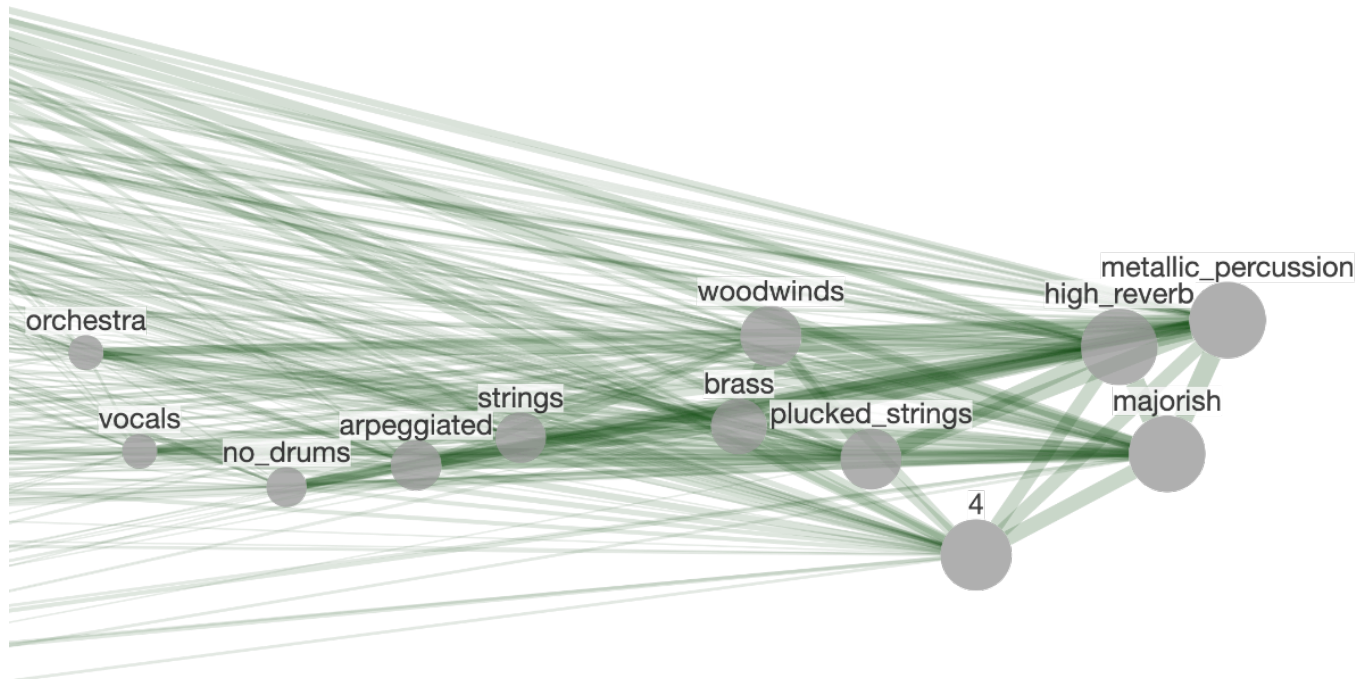
f. *Persona 3 FES*, "The Snow Queen"



Example 13. Portion of a semiotic code surrounding winter



Example 14. The most important musical features of Christmas, based on examples in our database that explicitly reference Christmas visually and/or narratively. Compare against Example 9, which includes all examples of winter video game music (including Christmas video game music).



Example 15. "Christmas Town" from *Kingdom Hearts II: Final Mix* (2007, PlayStation 2) exemplifies the musical features shown in Example 14

The musical score is for the piece "Christmas Town" from *Kingdom Hearts II: Final Mix*. It is written in 4/4 time with a tempo of 160. The key signature has two sharps (F# and C#). The score is arranged for the following instruments:

- Fl., Cl., Ob.:** Flute, Clarinet, and Oboe. The melody starts in the first measure with a quarter note, followed by eighth notes and a quarter note in the second measure. The third and fourth measures feature sustained notes with stems.
- Tbn., Tba.:** Trombone and Tuba. The part is mostly silent, with a few notes appearing in the third and fourth measures.
- Vln.:** Violin. The part consists of a rhythmic pattern of eighth notes, starting with a chordal texture in the first two measures and moving to a more melodic line in the last two measures.
- Vc., Cb.:** Violoncello and Contrabass. The part is mostly silent, with a few notes in the third measure marked *pizz.* (pizzicato).
- Marimba:** The part is mostly silent, with a few notes in the third and fourth measures.
- Sleigh Bells:** The part consists of a steady eighth-note pattern throughout the piece.
- Cymbals Bass Drum:** The part consists of a steady eighth-note pattern throughout the piece.

Video Example 2. “Ice Cap Zone” from *Sonic the Hedgehog 3* (1994, Sega Genesis) is one example of video game music that uses 1980s rock characteristics to suggest wintertime

PSG 1 as written
PSG 2 detuned and one beat late

PSG 1 / 2: square lead
YM 3: brass
YM 2: strings
YM 4: harp
YM 4: harp
YM 1: bass
PSG 4: hi-hat
YM 6: bass drum/snare

f
f
mp
mf
mf

'80s rock ensemble
panned right
harp lines suggestive of synth arpeggiators
synthesized slap bass sound used frequently in '80s pop
rapid bass line, more easily played with synth arpeggiators than with guitar
car whoosh sound effects
synth sound effects
orchestra hit
four-on-the-floor beat characteristic of new wave

Video Example 3. The gameplay during “A Snow Light” from *Tales of Symphonia* (2004, Nintendo GameCube) does not involve any gliding or skating (the player is exploring Flanoir, “The Snowy City”), but these intertextual resonances further amplify the winter topic in this example

$\text{♩} = 132$

Strings
Harp
Sleigh Bells
Drumset

pizz.
pizz.

Example 16. The jazz waltz of “Chilly Waters” from *Mario Party 3* (2000, Nintendo 64) suggests an intertext with “Skating” by Vince Guaraldi (1965)

Swing
♩ = 160

Glockenflute
Clarinet
Organ
Bass Synth
Shaker
Drumset

Gfl.
Cl.
Org.
B. Synth.
Sh.
D. Set

Detailed description: The image displays two systems of musical notation for the piece "Chilly Waters". The first system includes staves for Glockenflute, Clarinet, Organ, Bass Synth, Shaker, and Drumset. The second system includes staves for Gfl., Cl., Org., B. Synth., Sh., and D. Set. The music is in 3/4 time with a key signature of one sharp (F#) and a tempo of 160 beats per minute. The Glockenflute part features a melodic line with eighth and sixteenth notes. The Clarinet part has a rhythmic accompaniment of eighth notes. The Organ and Bass Synth parts provide harmonic support with chords and a steady bass line. The Shaker and Drumset parts provide a consistent rhythmic foundation.

Video Example 4. “Cool, Cool Mountain/Snowman’s Land” from *Super Mario 64*
(1996, Nintendo 64)

$\text{♩} = 150$

The musical score for Video Example 4 consists of three staves. The top staff is for Horn in F, written in treble clef with a key signature of one sharp (F#) and a 4/4 time signature. It begins with a whole rest, followed by a quarter note G4, a quarter note A4, a quarter note B4, and a quarter note C5. The middle staff is for Accordion, written in grand staff (treble and bass clefs) with a key signature of one sharp and a 4/4 time signature. The right hand plays chords and eighth notes, while the left hand plays a steady eighth-note bass line. The bottom staff is for Cymbals, written in a single line with a key signature of one sharp and a 4/4 time signature, featuring a simple eighth-note pattern.

Video Example 5. “Vanilla Lake” from *Super Mario Kart*
(1992, Super Nintendo Entertainment System)

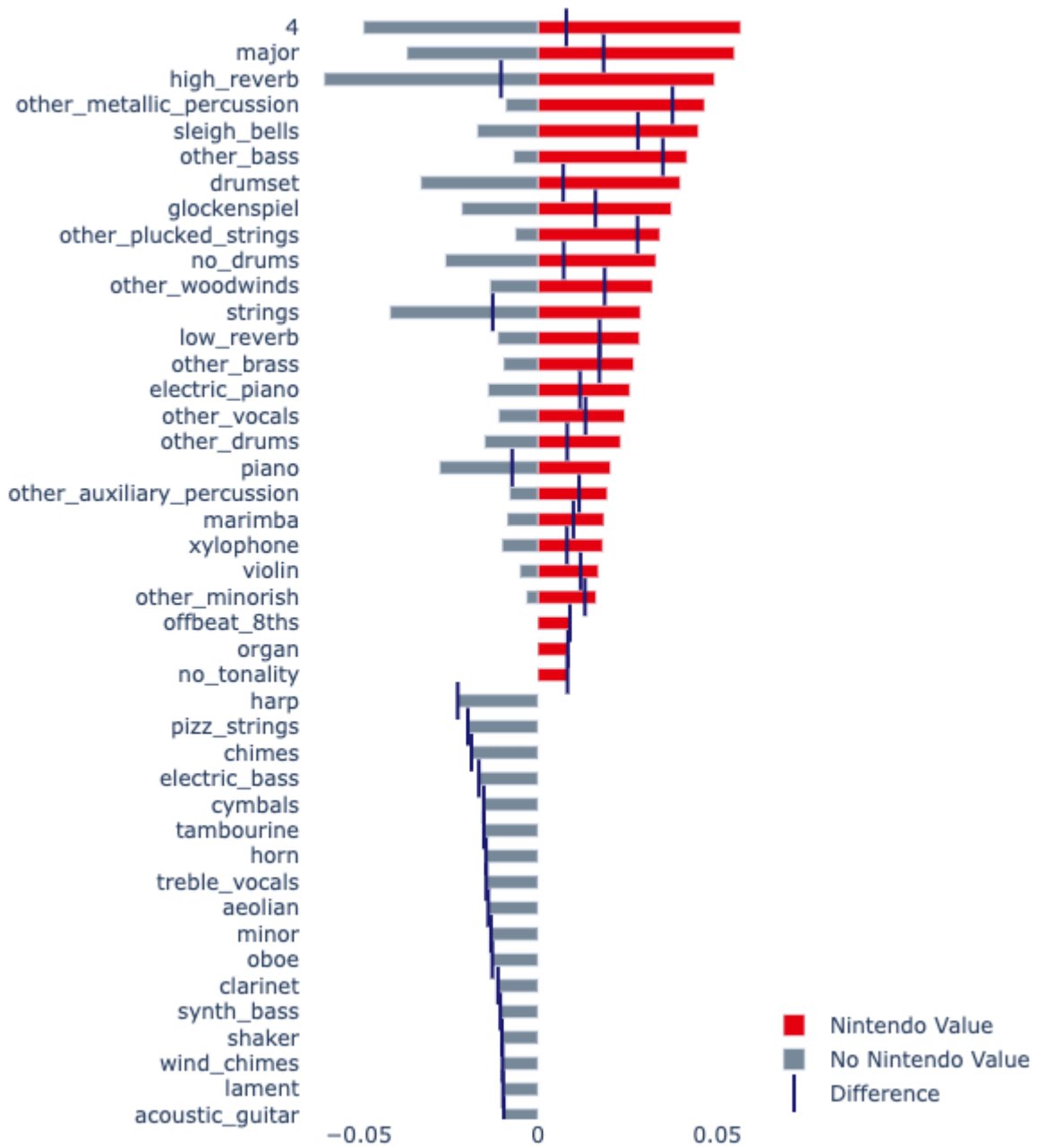
$\text{♩} = 108$

The musical score for Video Example 5 consists of five staves. The top staff is for Xylophone, written in treble clef with a key signature of three sharps (F#, C#, G#) and a common time signature. It features a melodic line with eighth and quarter notes. The second staff is for Piano, written in bass clef with a key signature of three sharps and a common time signature, providing harmonic support with chords and eighth notes. The third staff is for Electric Bass, written in bass clef with a key signature of three sharps and a common time signature, playing a steady eighth-note bass line. The fourth staff is for Hi-hat, written in a single line with a key signature of three sharps and a common time signature, using 'x' marks to represent hits. The bottom staff is for Bongos, written in a single line with a key signature of three sharps and a common time signature, playing a rhythmic eighth-note pattern.

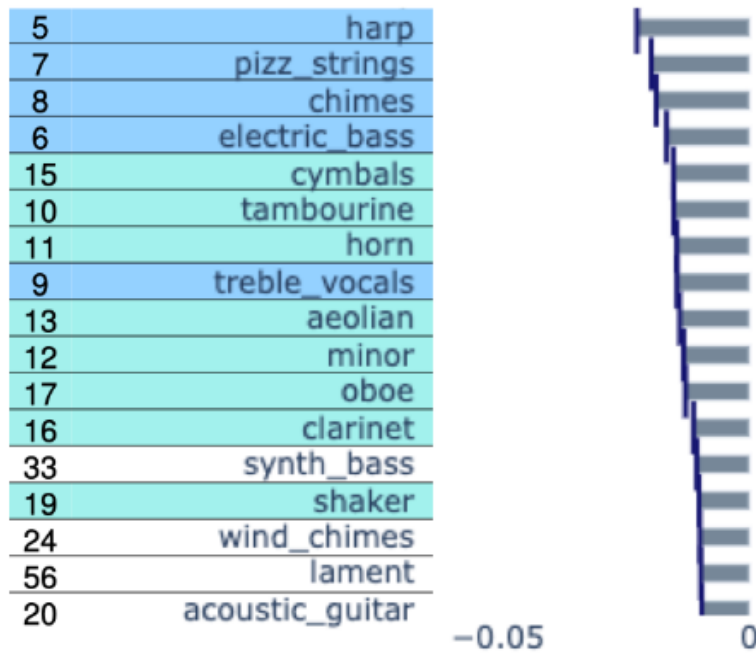
Video Example 6. "Frappe Snowland/Sherbet Land" from *Super Mario Kart 64*
(1996, Nintendo 64)

The musical score is arranged in six staves, each with a label on the left. The tempo is marked as $\text{♩} = 120$. The top staff, labeled "Tin Whistle" and "Violins", features a melodic line with a long note in the second measure. The second staff, "Organ", plays a chordal accompaniment with eighth notes. The third staff, "Guitar", provides a rhythmic accompaniment with chords. The fourth staff, "Electric Bass", plays a simple bass line. The fifth staff, "Marimba", plays a rhythmic pattern of eighth notes. The sixth staff, "Tambourine", plays a rhythmic pattern of eighth notes with accents. A small box containing the number "11" is located in the top right corner of the score.

Example 17. Importance (PageRank) of various musical features in winter video game music, in Nintendo-published games (red) vs. games from other publishers (gray). The black bar marks the difference in those values (red minus gray) and highlights imbalance between them



Example 18. The most important tags for non-Nintendo games that are unused by Nintendo games, paired with the tags' rank in prevalence in our dataset. Colors emphasize the rankings of the tags: blue highlights indicate top-ten tags; teal highlights indicate top-twenty tags.



Video Example 7. Gameplay clip of Shiveria Town from *Super Mario Odyssey* (2017, Nintendo Switch). The music for Shiveria Town is a jig and not overtly wintry, aside from the sleigh bells.

$\text{♩} = 132$

Glockenspiel

Pennywhistle

Violin

Marimba

Cellos + Bassoon

Sleigh Bells

Castanets + Tom-tom