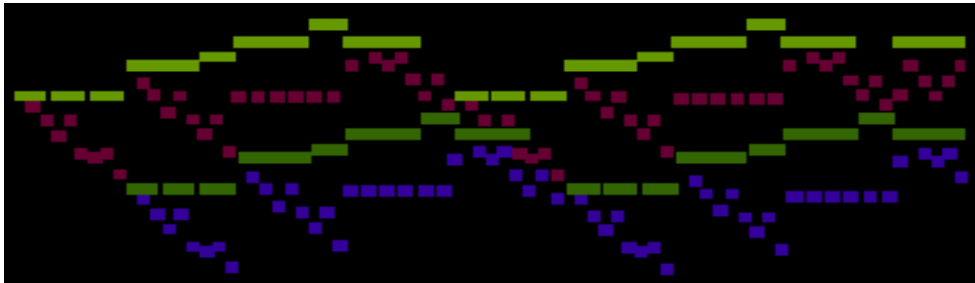


# Music Animation Machine



Second Demonstration Reel — 1996

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## Introduction — a score for listeners of all ages

Conventional music notation evolved to serve the needs of composers, performers, and conductors. By contrast, the Music Animation Machine is a musical score for *listeners*.

The Music Animation Machine (MAM) is an animated visual display corresponding to the information in a musical performance. The display is synchronized with the sounds of the piece it represents.

In place of the symbols of conventional music notation, a MAM score uses colored bars to represent the notes of a piece. The vertical placement of each bar indicates the pitch of its note, the horizontal placement indicates its timing relative to the other notes of the piece, and the length of the bar gives its duration. These bars scroll across a computer or television screen as the piece plays; when a bar reaches the center of the screen, it brightens as its corresponding note sounds — the center of the screen is always the “now” point.

A MAM score is like a conventional musical score in that it gives information about the pitch and timing of the notes of a piece. As in conventional notation, musical events at different points in the piece can be seen at once, allowing recognition of — and comparison between — patterns.

Unlike a conventional score, the MAM uses a single “pitch space.” In conventional notation, different instruments are distinguished by placing the notes for each instrument on a separate staff, making it difficult to see the relationship between the notes of two instruments, since the viewer must mentally combine two or more staves into one. In MAM notation, all the notes are on the same “staff,” with different instruments indicated by color.

MAM notation shows the actual irregular timings of notes in a performance, not the mathematically exact timings of conventional notation.

The MAM notation can be colored to highlight thematic units, instrumentation, harmony, or dynamics.

MAM scores can be understood by very young children: children as young as eighteen months have demonstrated that they recognize the relationship between the sound and the visual display. Most people are visually oriented and are more able to pay attention to something with a visual aspect than something purely aural. This may be the reason that having a visual analogue to a piece of music helps make it more real to children.

## How to adjust your television for optimal viewing

To view this tape at its best, adjust your television as follows:

1. Go to a section of the tape that has music playing.
2. Turn BRIGHTNESS all the way up.
3. Turn BRIGHTNESS down until the background is solid black.
4. Turn COLOR all the way up.
5. Turn COLOR down until the bars of color are clear and free from smearing.

Eric Satie  
Gymnopédie No. 1  
Piano

Satie's meditative Gymnopédies are a model of simplicity, — a languorous melody moving just once (or less) each beat, accompanied by one bass note and one chord per measure ...



In No. 1, the pattern is broken only twice, where the chords speed up and then slow down ...




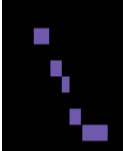

This happens at the two cadences, one in the middle of the piece, and one at the end.

Here's the whole piece ...



# Johann Sebastian Bach Tocatta and Fugue in D minor Organ

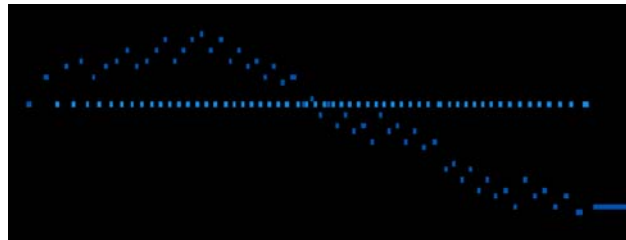
The toccata opens by introducing the motivic material that will be used in the piece:

... a mordent ...  ... a falling scale ...  ... a rising scale ... 

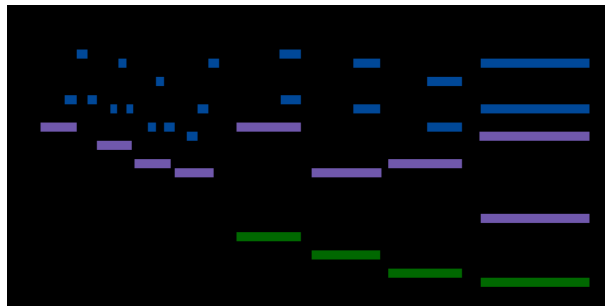
... a diminished seventh chord  
(made from evenly-spaced minor thirds) ...



... and a note which moves being  
alternated with a note that stays still ...



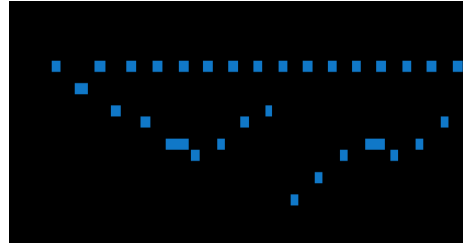
Here, a falling scale in the tenor is  
imitated more forcefully by the bass ...



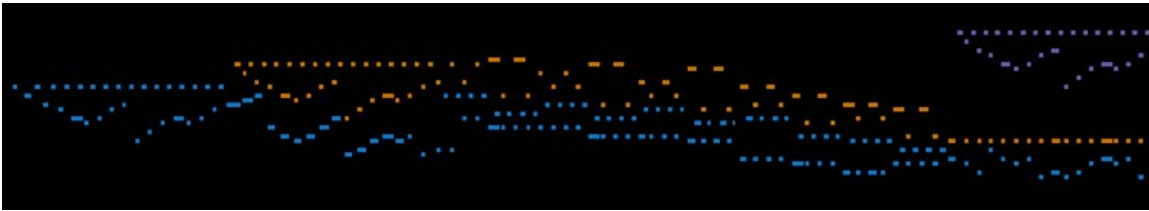
... and here, the diminished seventh  
chord is arpeggiated in both hands ...



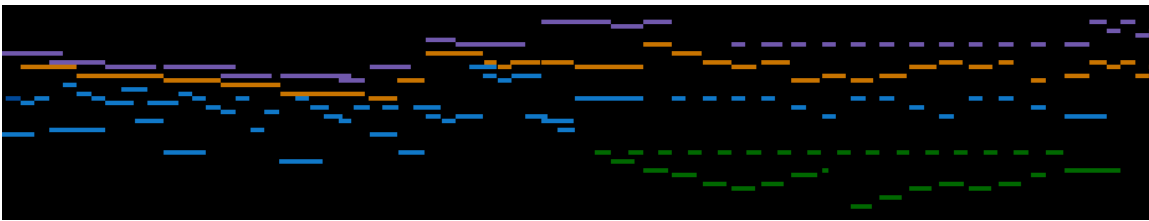
The mordent, the rising and falling scales, and the alternation of a note that moves with one that stays put are combined to form the theme of the fugue ...



The theme is introduced in the top three voices ...



... and then, after a suitable delay (to build up the listener's anticipation), in the pedals (notice the break in the melody that happens because this is played with the feet) ...



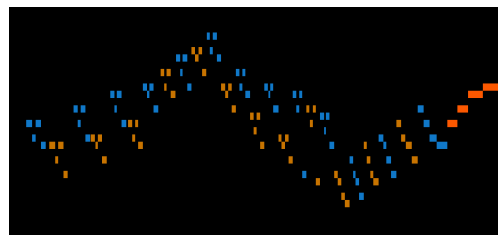
This is not a strict fugue — the counterpoint is often interrupted by solo passagework ...



Near the end of the piece, the fugue stops, and the toccata resumes ...



... and before the final cadences, the mordant and rising and falling scales are seen one last time ...

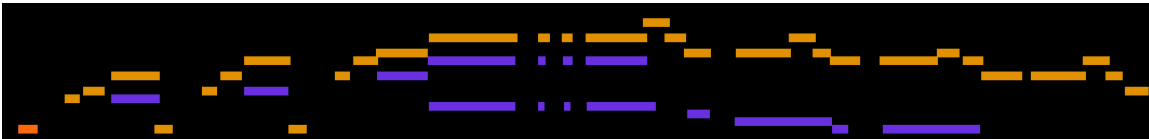


# Frédéric Chopin Grande valse brillante Piano

A single, trumpet-like repeated note ...



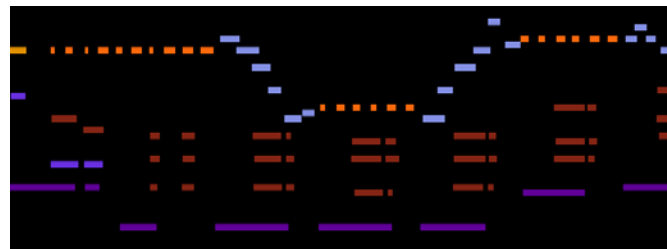
... announces the first section of the waltz, its melody rising triumphantly then relaxing ...



... (accompanied by your basic oom-pah-pah) ...



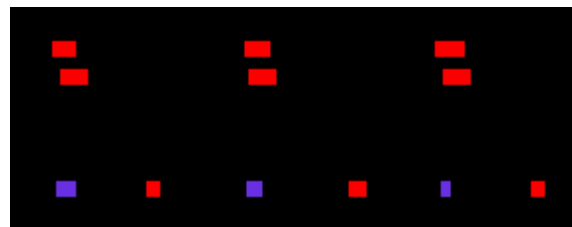
The second section takes up the repeated note idea more insistently ...



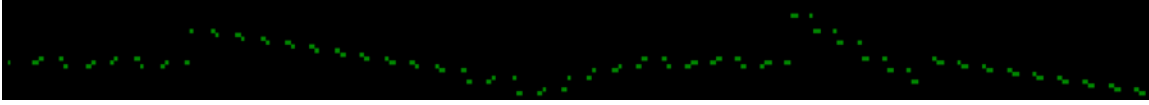
The third section introduces a melody moving in parallel thirds (with just a hint of the repeated notes) ...



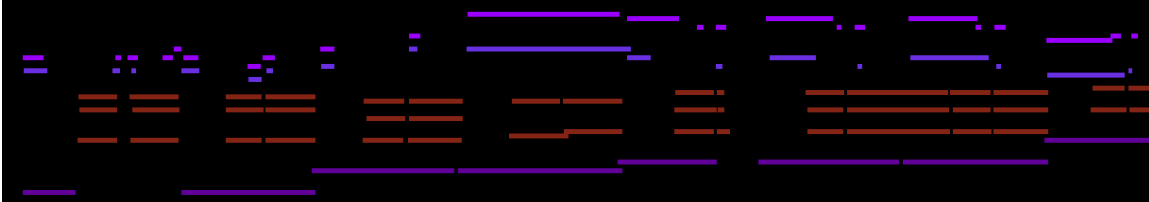
The fourth section break the 3/4 waltz rhythm with a hemiola (three groups of two replace two groups of three) ...



Then, for something completely different, skipping grace notes ...



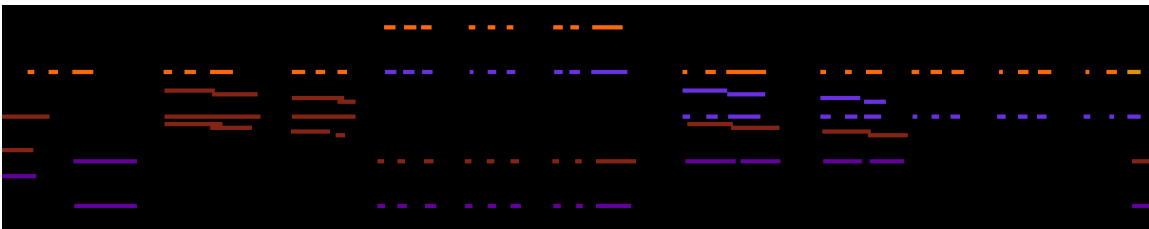
... returning to more of the parallel thirds stuff ...



A sinuous, sweet melody (more like a nocturne than a waltz) lulls us into complacency ...



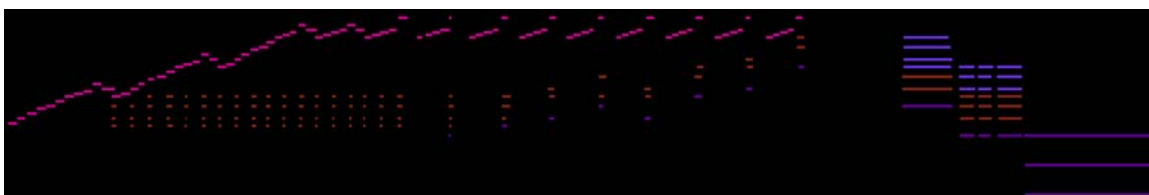
... only to be jarred out of it by the reappearance of the trumpet call ...



... signaling the return to the first theme. The ending combines repeated notes and skipping grace notes ... rising, crescendoing ...



... and finally fading into the stratosphere ... followed by the undoubtedly final chords ...



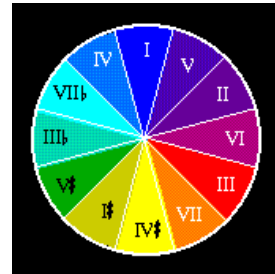
# Franz Liszt

## Hungarian Rhapsody No. 2

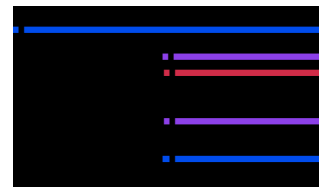
### *Miles Graber, Piano*

The musical rendition of this piece was the result of a group effort. First, I recorded Miles Graber’s performance. Then, Miles and I were joined by Lisa Turetsky and James Carmichael for an editing session. We listened to each passage over and over, using the Music Animation Machine’s performance editor to change the timing, dynamics, and pedaling. After several hours, though we knew we could keep at it indefinitely, we decided that it was good enough.

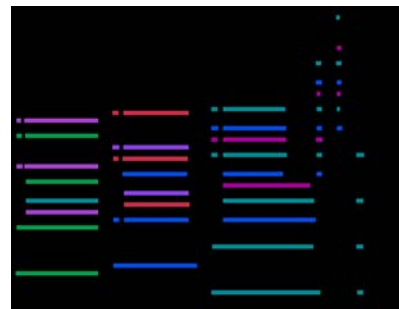
The visual rendition of this piece uses “harmonic coloring,” in which notes are colored according to their position on the “circle of fifth.” The note of the tonic (I, the “home key”) is shown in blue; as you move toward the dominant (V), the colors get redder; toward the subdominant (IV), they get greener ...



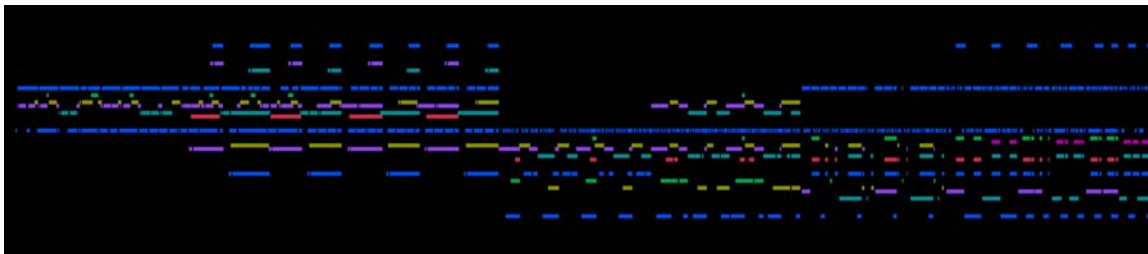
This piece is unusual; it starts on the tonic, as you’d expect (with a C-sharp in both the melody and the bass — the violet is the fifth of the chord and the red is the major third) ...



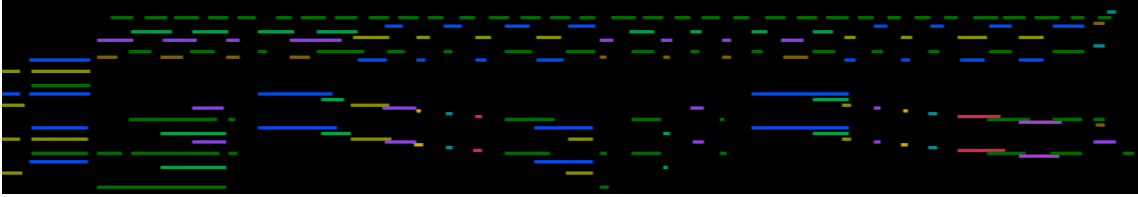
... but it ends on the subdominant ...



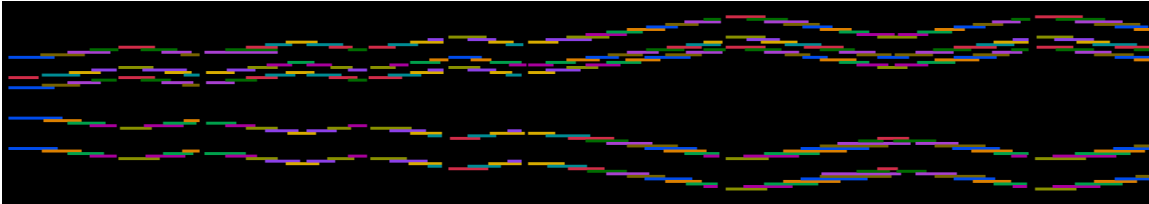
The movement of the piece from one harmonic area to another, is shown by a change in the palette of colors; here, near the beginning, the piece is very clearly in I, the tonic area ...



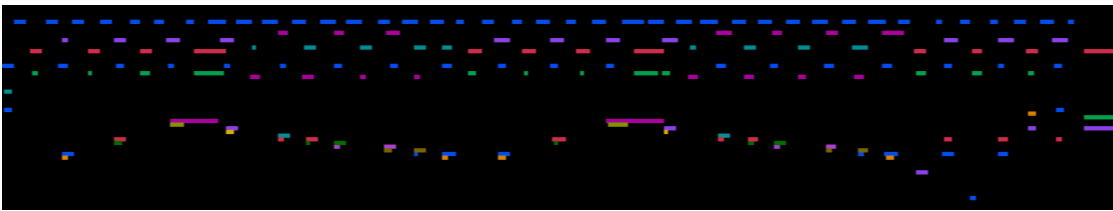
... whereas here, it's in vi, the relative major (seen in the chart as V#) ...



... and in this (literally!) chromatic passage, we see all the colors ...



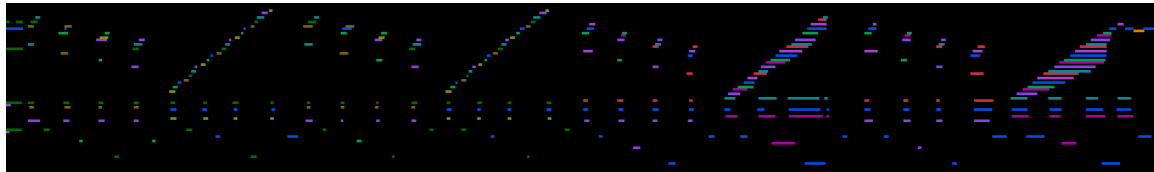
There's a lot of fancy fingerwork in this piece (way to go, Miles!), including repeated notes ...



... octave leaps of repeated notes ...



... fast runs ...



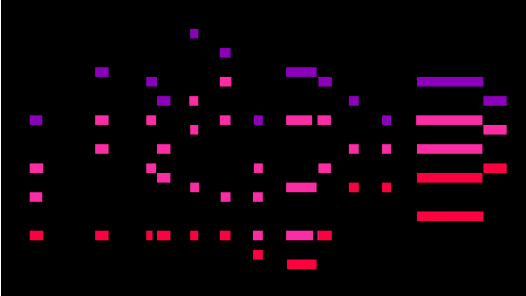
... and, last not but not least, the well-known octave passage right before the end ...



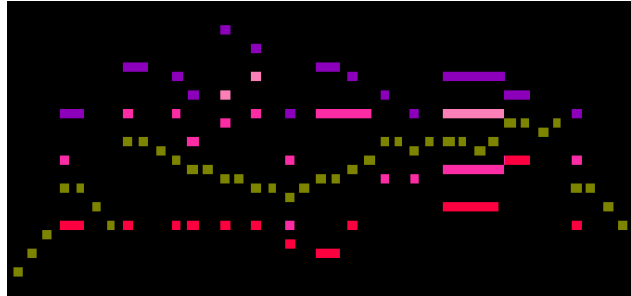
Peter Tchaikovsky  
Overture from *The Nutcracker*  
Orchestra (synthetic)

I did not have an orchestra at my disposal, so I was grateful to Michael Dalby for lending me his orchestral synthesizer for this recording.

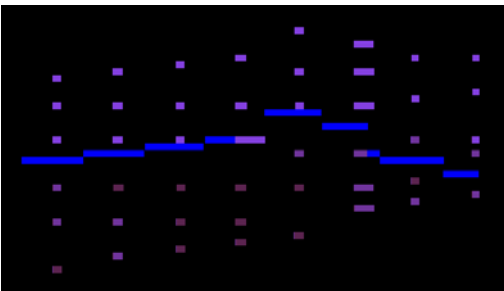
The piece opens with flutes ...



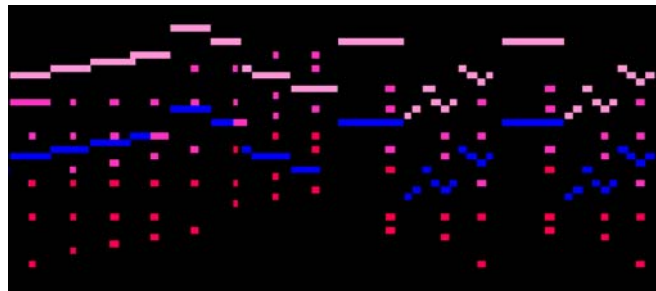
... which are soon joined by a clarinet ...



... here the oboe takes a solo ...



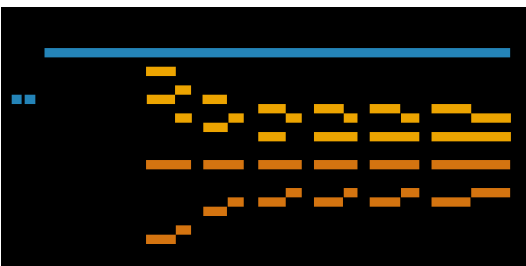
... and here it's by flutes an octave higher ...



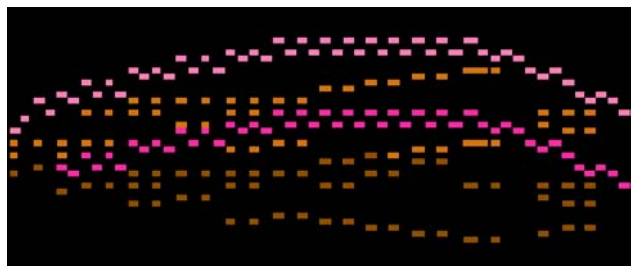
In this passage, the oboe trades off with the clarinet ...



There's also a brief trumpet solo ...

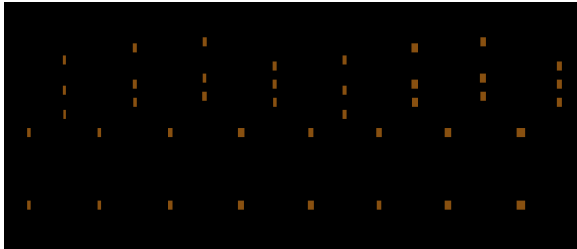


The finale comes back to the flutes ...



Peter Tchaikovsky  
Dance of the Sugarplum Fairy from *The Nutcracker*  
Orchestra (synthetic)

The marimba accompaniment begins alone ...



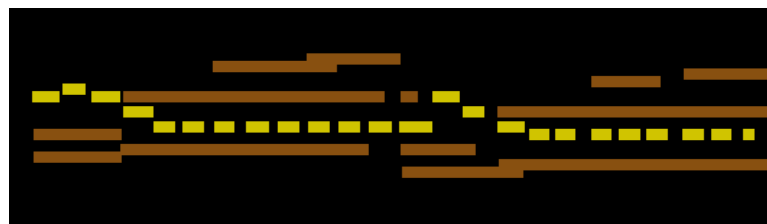
... and is then joined by the celeste ...



... the bassoon intrudes ...



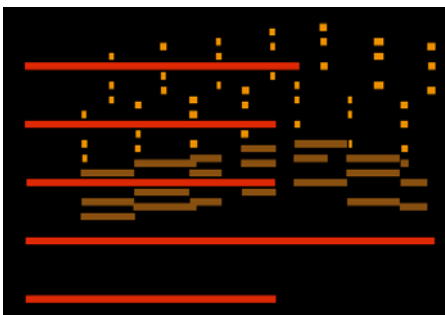
Here the trumpet has a solo ...



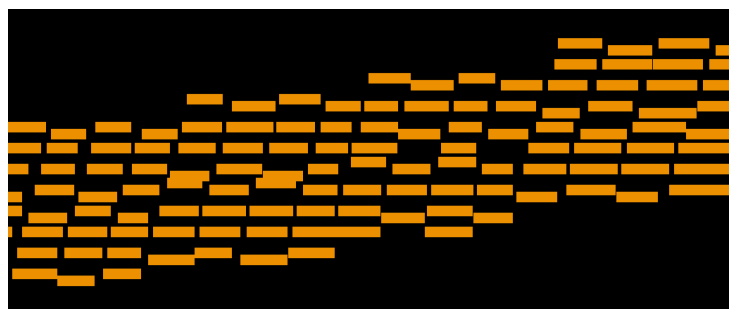
... as does the clarinet ...



The strings enter dramatically ...



... and here's the celeste's famous solo ...

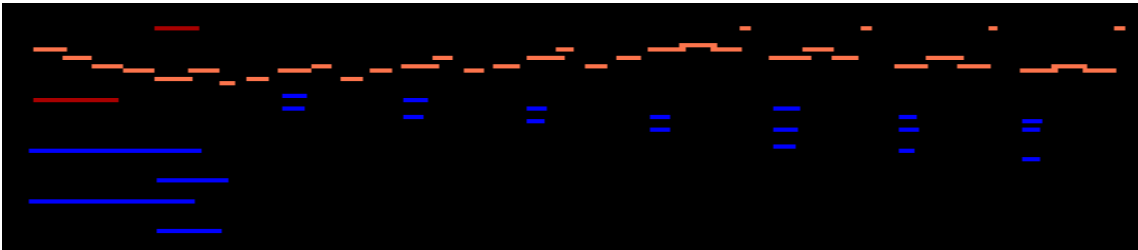


# Frédéric Chopin

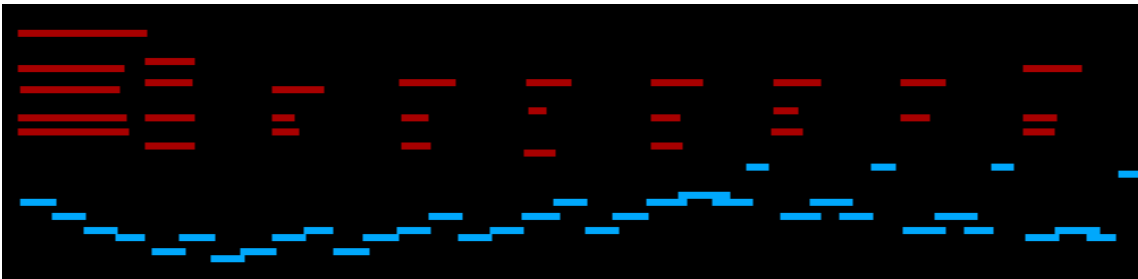
## Etude, Opus 10, No. 4

### Piano

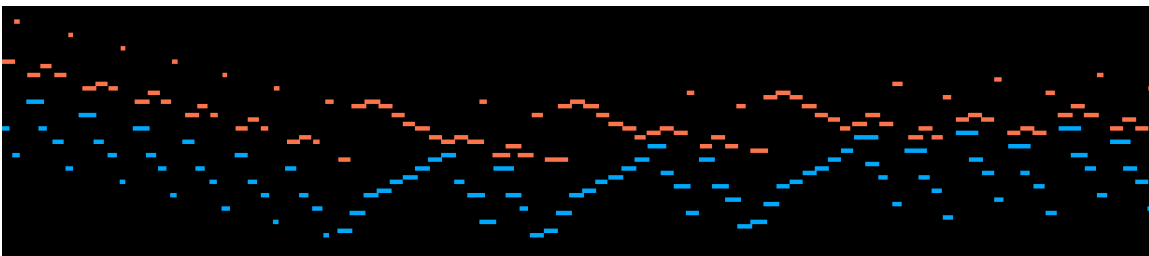
In this piece, running passages in one hand are pitted against chords in the other. The notes for the right hand are colored red, and those for the left hand are colored blue. The fast notes are brighter and the chords are more subdued. The right hand starts out fast ...



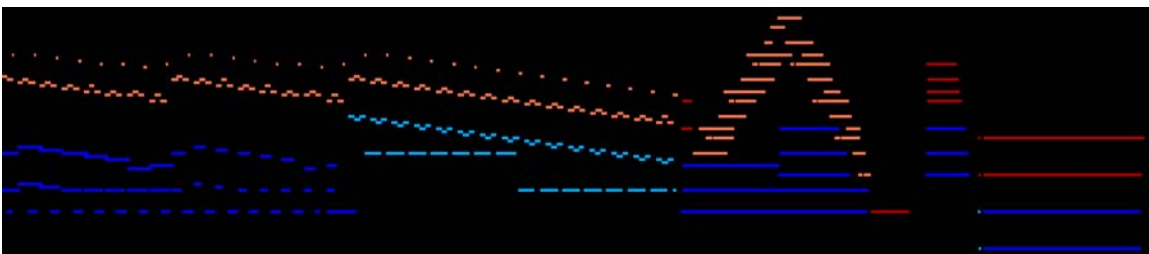
... and the left responds ...



There are some places where both hands move quickly ...

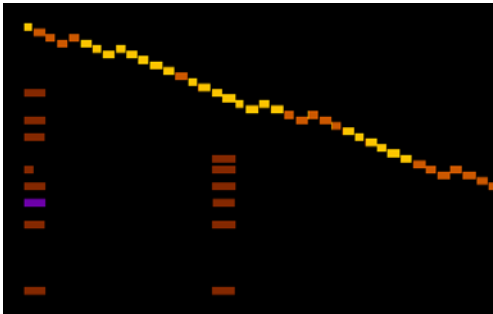


The ending is quite dramatic ...

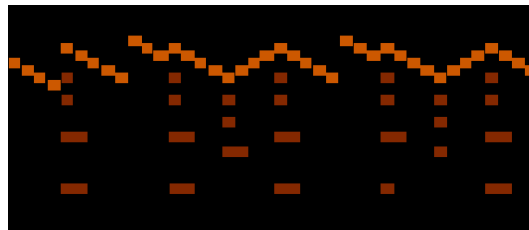


# Nikolai Rimsky-Korsakov Flight of the Bumblebee Orchestra (synthetic)

The bumble-bee (played by flute and strings)  
flies in from the sky ....

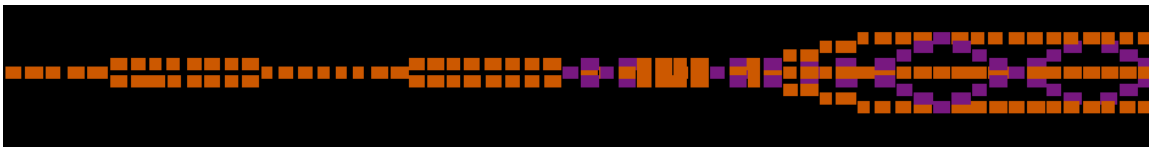


... and soon gets down to business ...



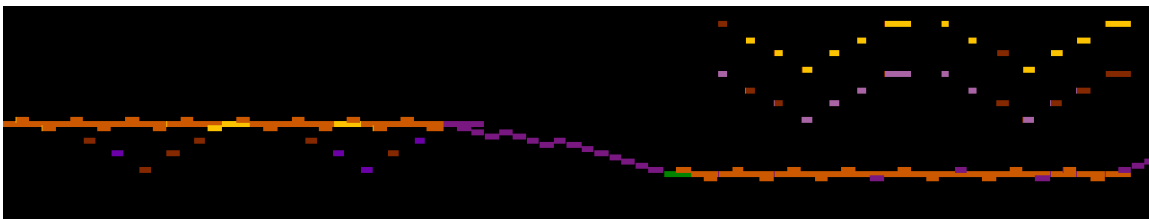
Here a symmetrical  
spreading by the strings ....

... is augmented by clarinets ...



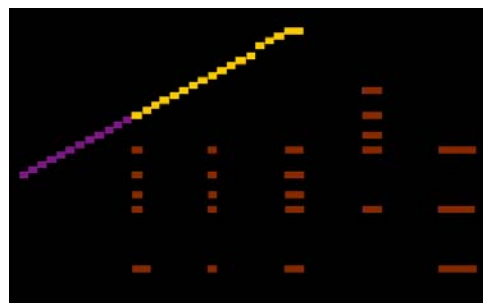
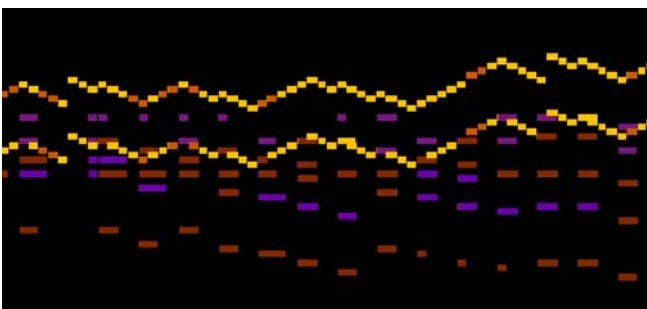
And here the string pizzicato ....

... is joined by the flutes ...



The finale has the bumble-bee theme in octaves ...

... the bee leaves the way it came ...



## Warranty

All Music Animation Machine products are guaranteed to be free of manufacturing defects. Should you receive a defective tape or DVD, please contact us; we will replace it promptly:

Music Animation Machine  
Post Office Box 13622  
Berkeley, CA 94712

or

**[smalin@well.com](mailto:smalin@well.com)**

More information about the Music Animation Machine ...

... can be found at the MAM web site:

**[www.musanim.com](http://www.musanim.com)**