

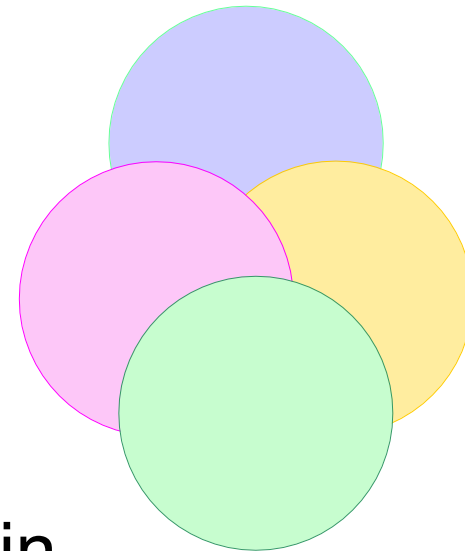
Using Musical Information

Music 253/CS 275A 1B

Stanford University

1. Classifying Data Domains

- **Visual** domain
 - scores, parts
- **Aural** domain
 - performances, recordings
- **Logical** domain
 - analytical data sets
- **Cognitive/perceptual** domain
 - how we **hear/understand** music



2. Granularity of information

Data for **interchange**

A comparison of three view modes:



Satellite View



Blend View

Click image for a larger view



DEM View

Data for **classification**

Data for **form** analysis

A comparison of different resolution:



20km resolution



1km resolution

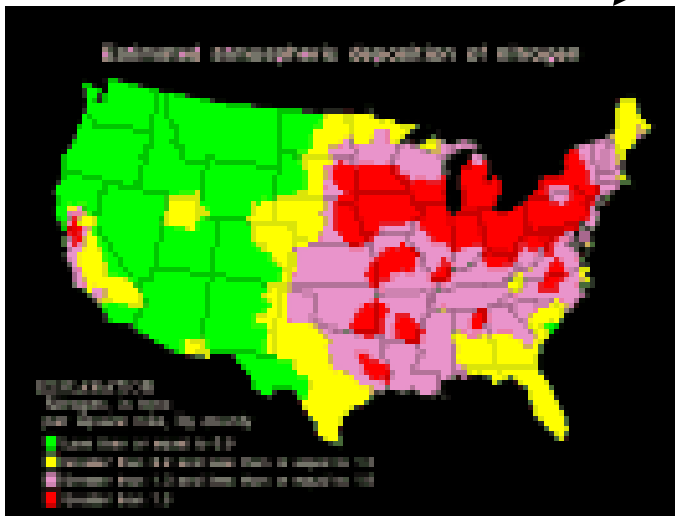


50m resolution

Data for **feature** analysis

3. Information for comparison

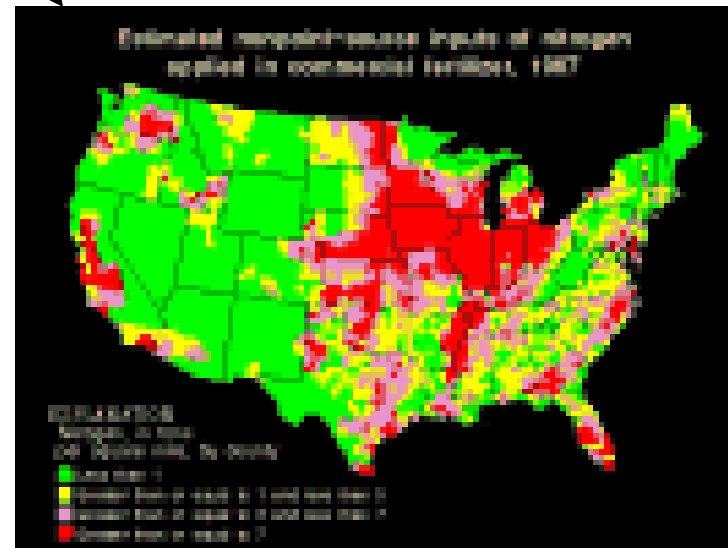
Entity: the US



Identity #1:

The **atmospheric** nitrogen map of the US

Background=US



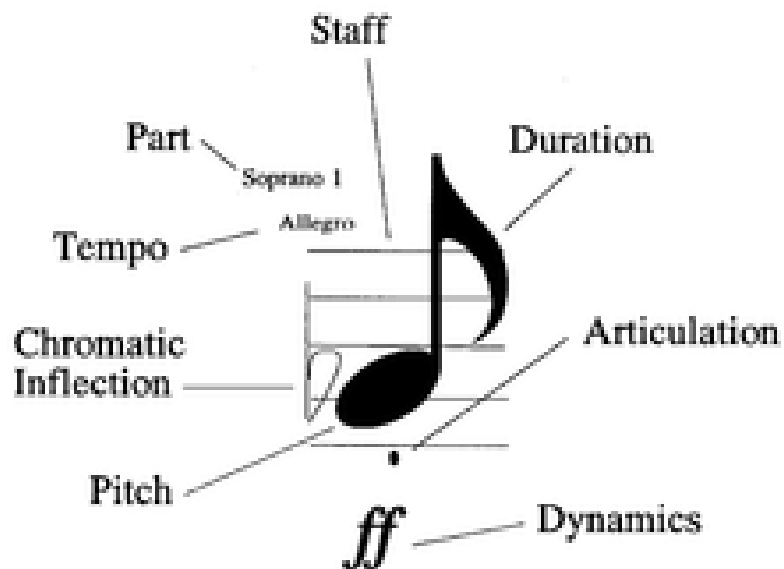
Identity #2:

The **ground** nitrogen map of the US

Background=US

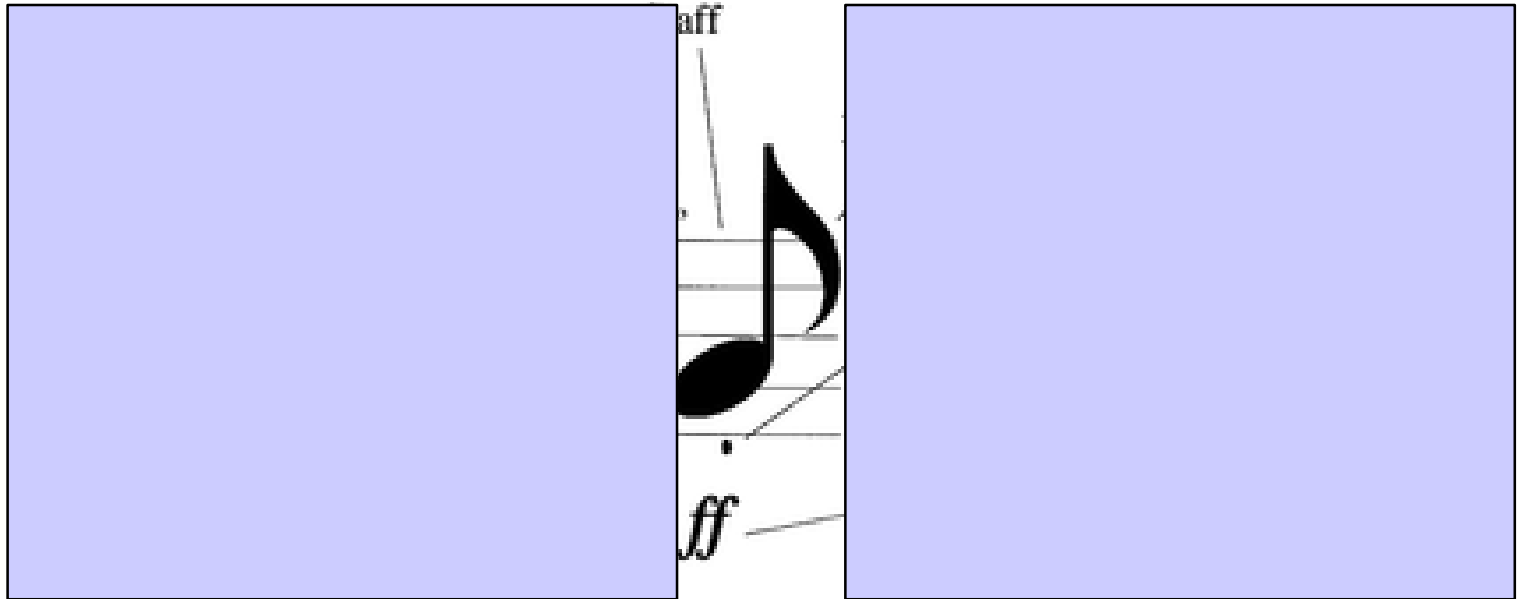
4. Musical features of one note

Violin



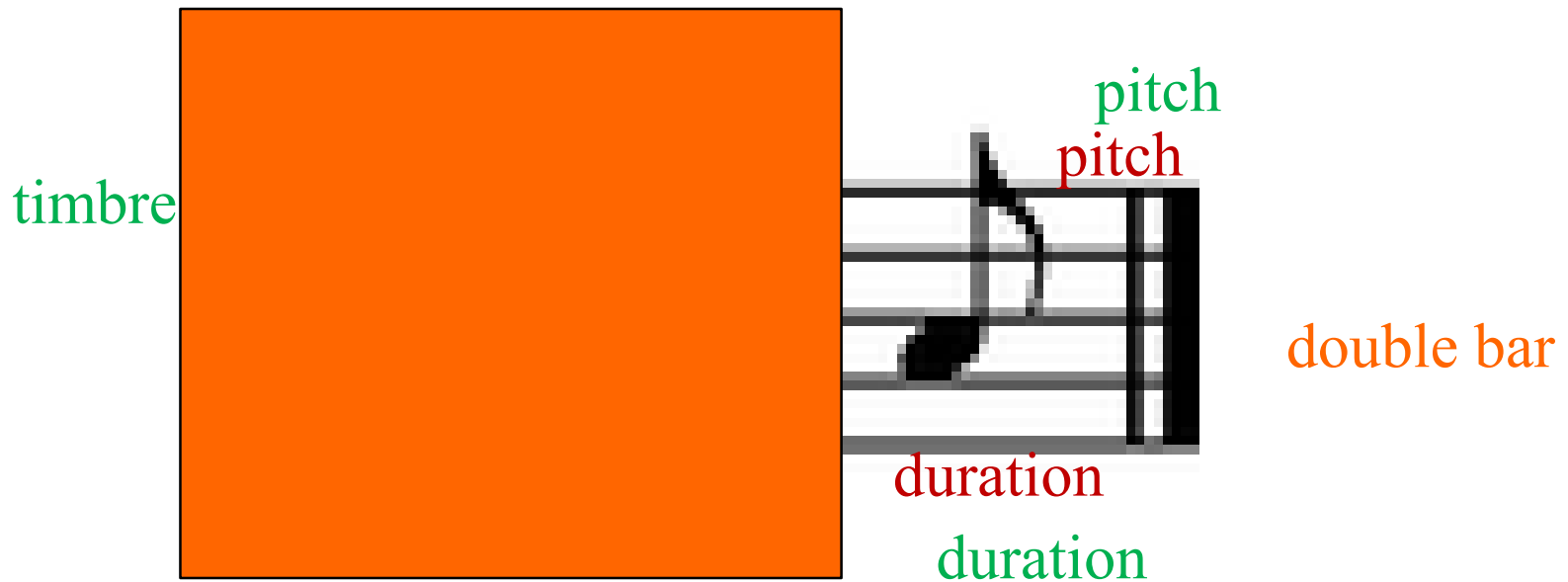
4. Musical features of one note

Cognitive filter to discover one note



4. Musical features of one note

Contextual information (**notation**)



Contextual information (**metadata, aural ambience**)

5. Musical features by domain

Articulation

Example 1

Sopran

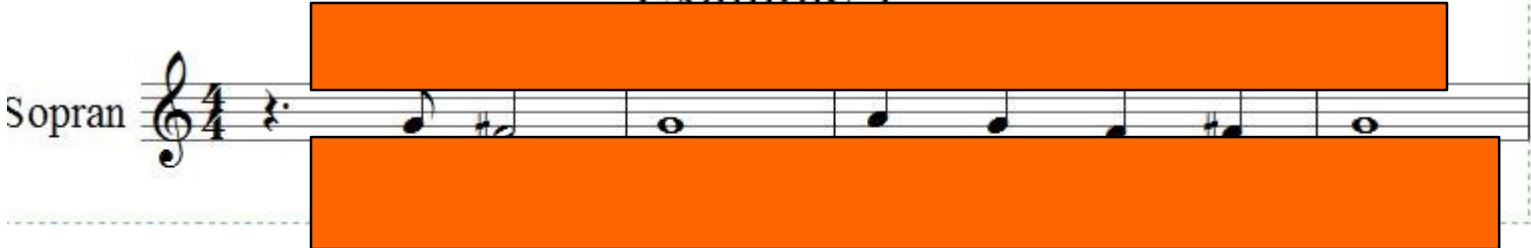
The image shows a musical staff for Soprano in 4/4 time. The notation includes a treble clef, a key signature of one sharp (F#), and a common time signature. The music consists of six measures. The first measure starts with a quarter rest, followed by a quarter note G4 with a 'cresc.' dynamic marking and a 'v' (accent) above it. The second measure contains a half note G4 with a '2' above it and a 'fff' dynamic marking below it. The third measure contains a quarter note A4 with a '3' above it. The fourth measure contains a quarter note B4 with a '4' above it and a 'Ped.' (pedal) marking below it. The fifth measure contains a quarter note C5 with a '4' above it and a '*' (ornament) marking below it. The sixth measure contains a half note C5 with a '4' above it. The entire staff is enclosed in a dashed box.

Dynamics, Gesture

5. Domain conflicts (symbols vs sound)

Articulation: many sound events prescribed in one symbolic figure

Example 1



Sopran

The image shows a musical staff for Soprano in 4/4 time. The notation includes a treble clef, a key signature of one sharp (F#), and a common time signature. The notes are: quarter note G4, eighth note A4, quarter note B4, quarter note C5, quarter note B4, quarter note A4, quarter note G4, quarter note F#4, and quarter note E4. Two large red rectangular boxes redact the lyrics and any other markings below the staff. A dashed line is visible at the bottom left and right of the staff.

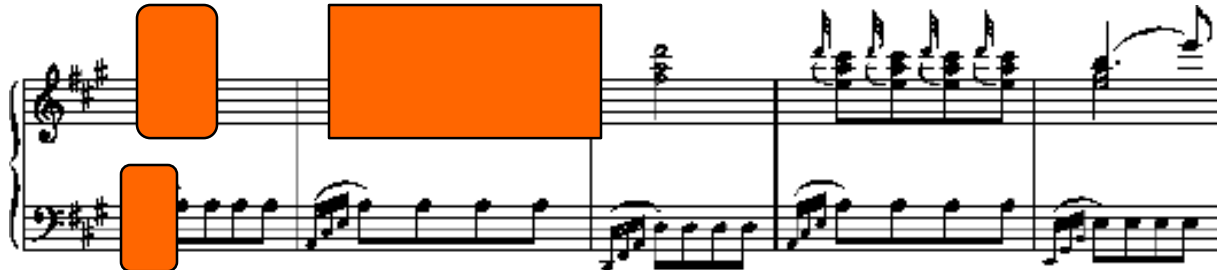
Dynamics, Gesture: reduced to symbols in writing but may operate on continuum



A hand-drawn wedge-shaped line, tapering from left to right, positioned below the text.

6. Data beyond time (*Beyond MIDI #2*)

Time-stealing “durations”



Arpeggios

Grace notes (single, multiple)

Staccatos

7. Score organization

Types 1a, 1b (*Beyond MIDI* #1)

Score-major systems

Part-major systems

Page-traversal dilemmas

The diagram illustrates a page-traversal dilemma in a musical score. It shows two systems of staves. The top system includes staves for 'clarinet in A', 'violin II', 'viola', and 'violoncello'. A light blue horizontal bar highlights the first two measures of the 'clarinet in A' staff, and a light green vertical bar highlights the first two measures of the 'violin II' staff. The bottom system shows a full page of music with a vertical bar line indicating a page turn. The page number '8' is visible at the top left of the second system. The page-traversal dilemma is highlighted by the intersection of the highlighted boxes and the page turn line.

7. Score organization

Type 2 (*Beyond MIDI #2*)

The “grand staff”



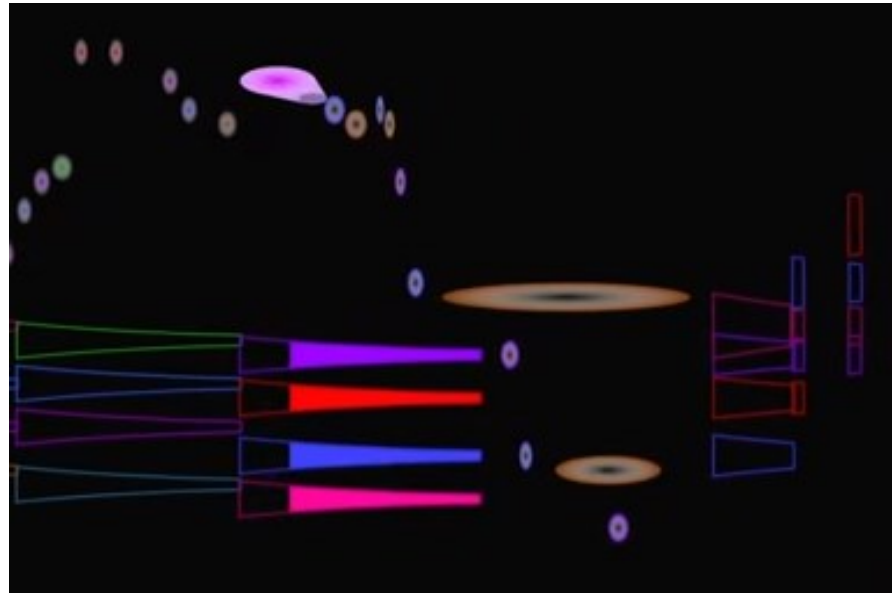
The grand staff as a **single instrument**

8. Sound features **not** in notation

□ Sound decay

<http://www.youtube.com/watch?v=WdGQuITuwiQ>

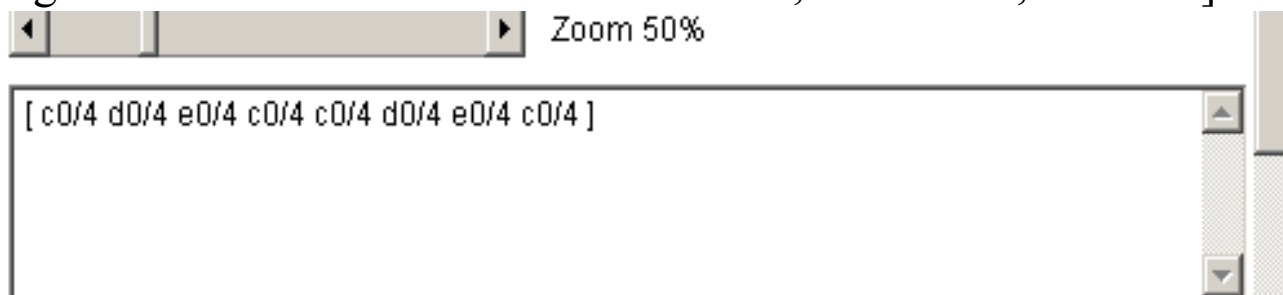
[from Stephen Malinowski's Music Animation Machine]



9. The **GUIDO** *NoteServer* (ASCII input)

Developed by Holger Hoos et al at the Fraunhofer Institut, Darmstadt, 2000-04]

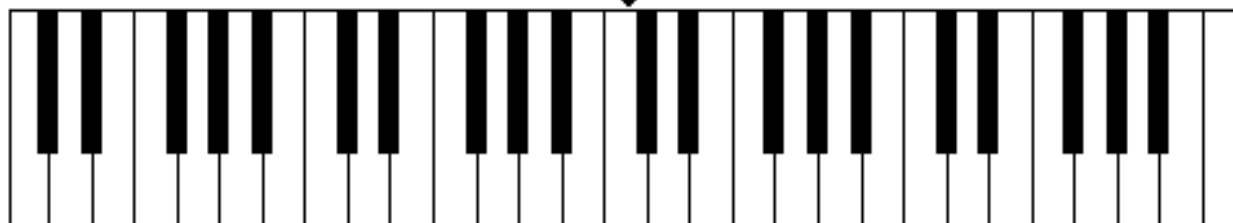
3. Stored data



2. Symbol



1. Sound



Find method for entering: pitch, inflection, octave

<http://www.noteserver.org/>

Guido input: Pitch and Duration

Feature definition and grouping

Data

representation
stored

Note duration

Note prolongation

Octave number

Pitch inflection

Pitch (key no.)

The screenshot shows a music notation software interface for the piece "Frere Jacques". At the top, there is a zoom control set to 50%. The main area displays the title "Frere Jacques" and a sequence of musical notes. The notes are represented by a series of boxes: a blue box, a red box containing a whole note, a blue box, a red box containing a dotted half note, a red box, a red box containing a sequence of numbers [-1, 0, 1, 2, 3], a red box, and a red box containing a sharp sign (#). Below the notes is a piano keyboard diagram. At the bottom, there are several control buttons: "rest", "send", "auto load" (checked), and "page settings". Arrows point from the numbers 48, 60, and 72 on the bottom axis to the corresponding positions on the piano keyboard.