Itoh Laboratory,
Ochanomizu University

Visualization for Multimedia Contents

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Shonan NII Meeting 2014/3/10

This talk introduces our works on…

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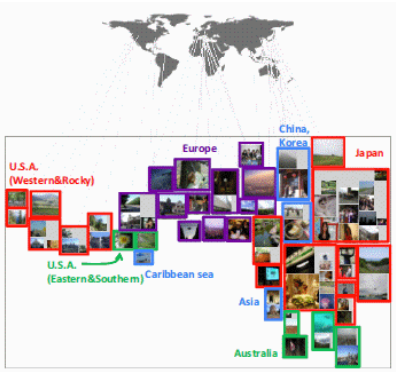
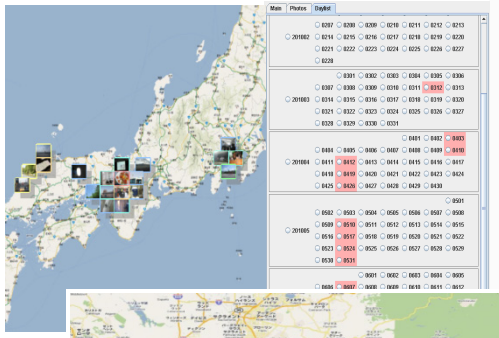
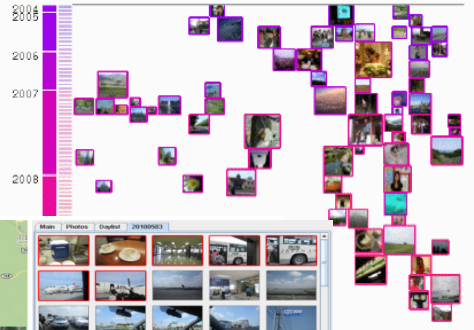
Ochanomizu University

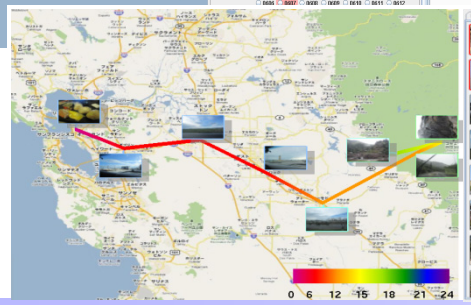
Photograph browsing

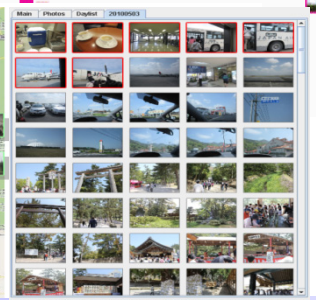
[AVI 10, ACM SAC 11 etc]





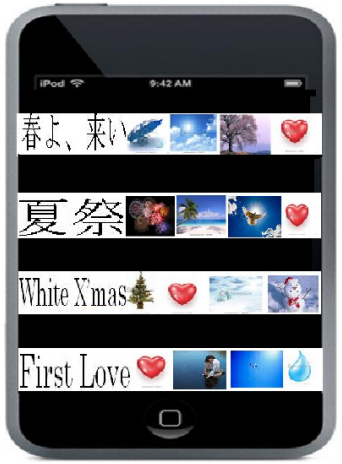


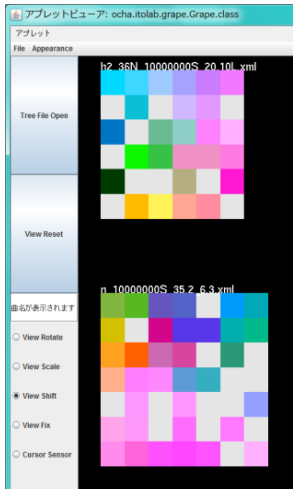


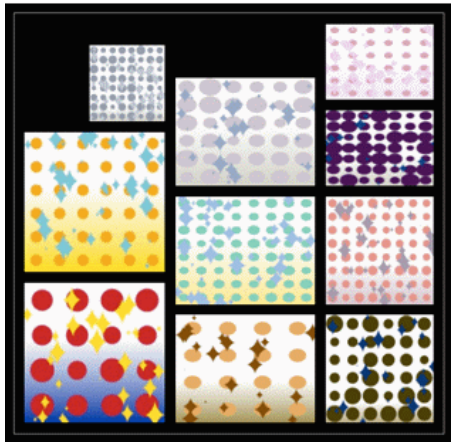


Music browsing

[ACM SAC 11, IV 11 etc]







Part I:
Photograph browsing

Photograph browsing tools

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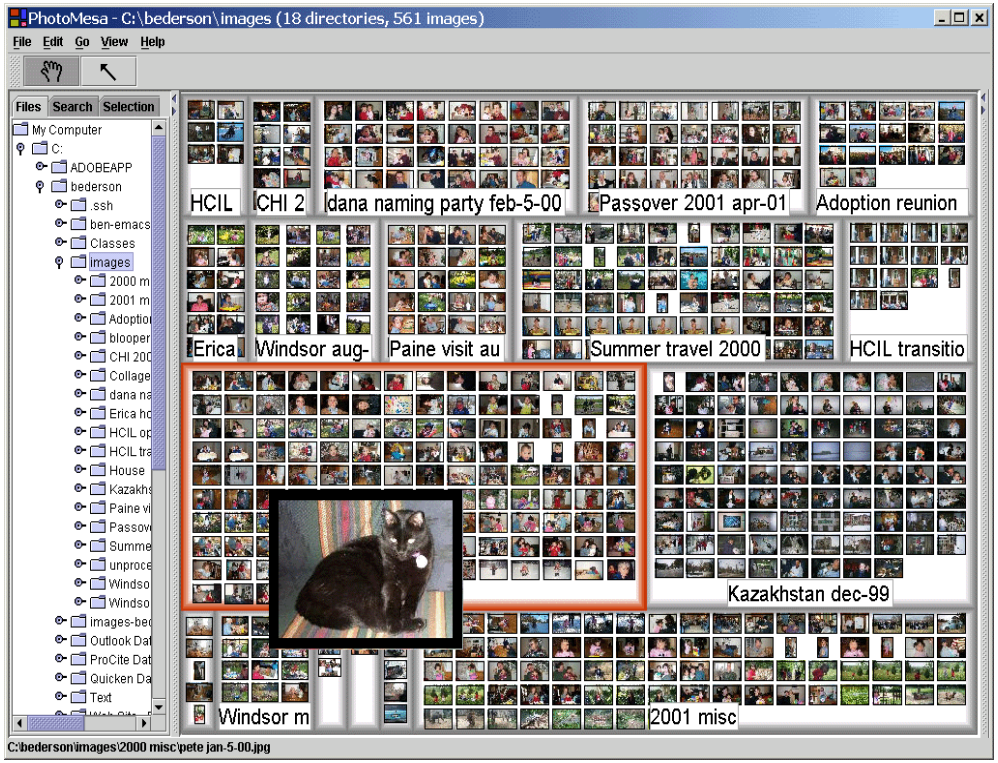
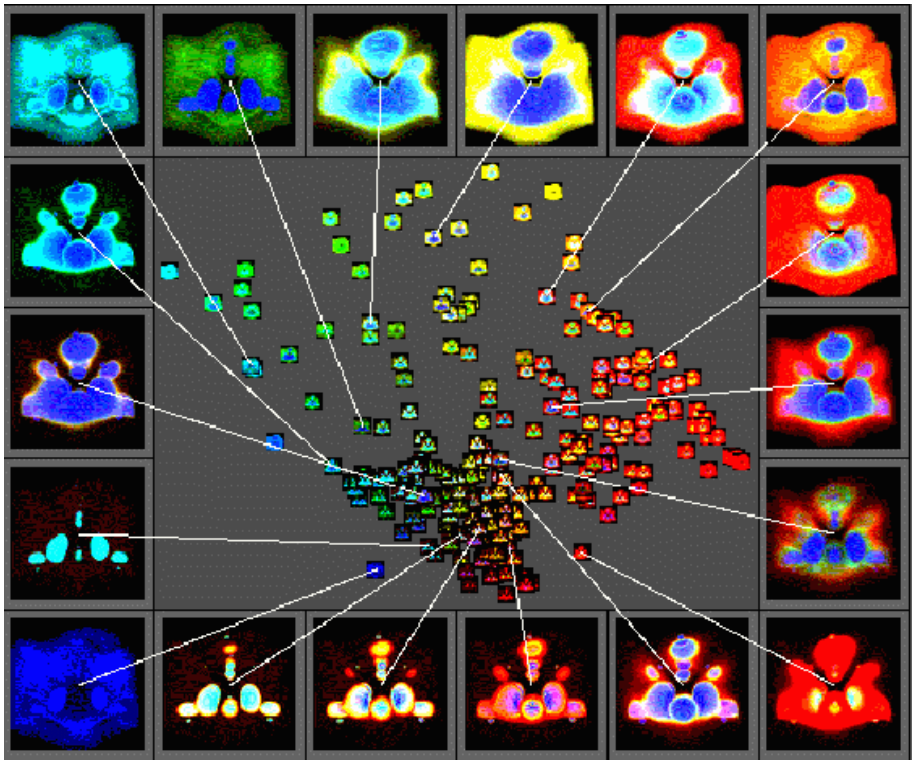
- To browse large photo collection intuitively



PhotoMesa



Design Gallery

Photograph browsing tools

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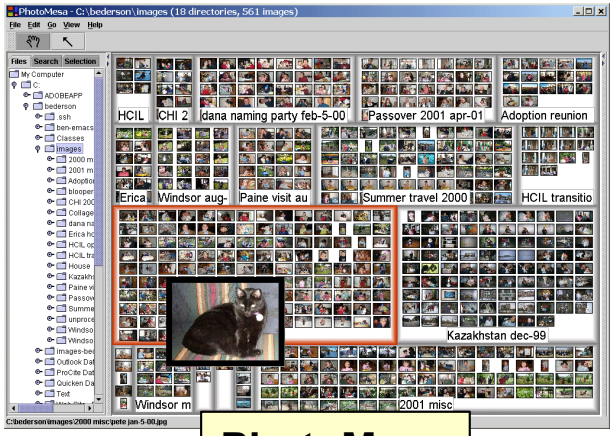
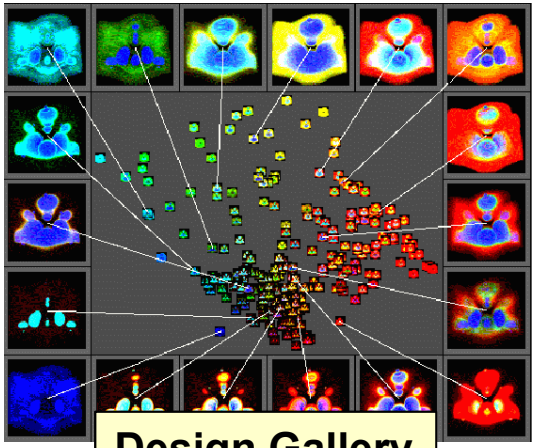
- To browse large photo collection intuitively
- Personal or professional
- Structured (tree, graph, time-sequence…) or scattered
- Image processing algorithms
  - Meta-data based: (time, place, person …)
  - Low-level feature based: (color, texture, shape …)
  - High-level recognition based: (human face, object, scene …)



PhotoMesa



Design Gallery

Our zooming interface for photo exploration

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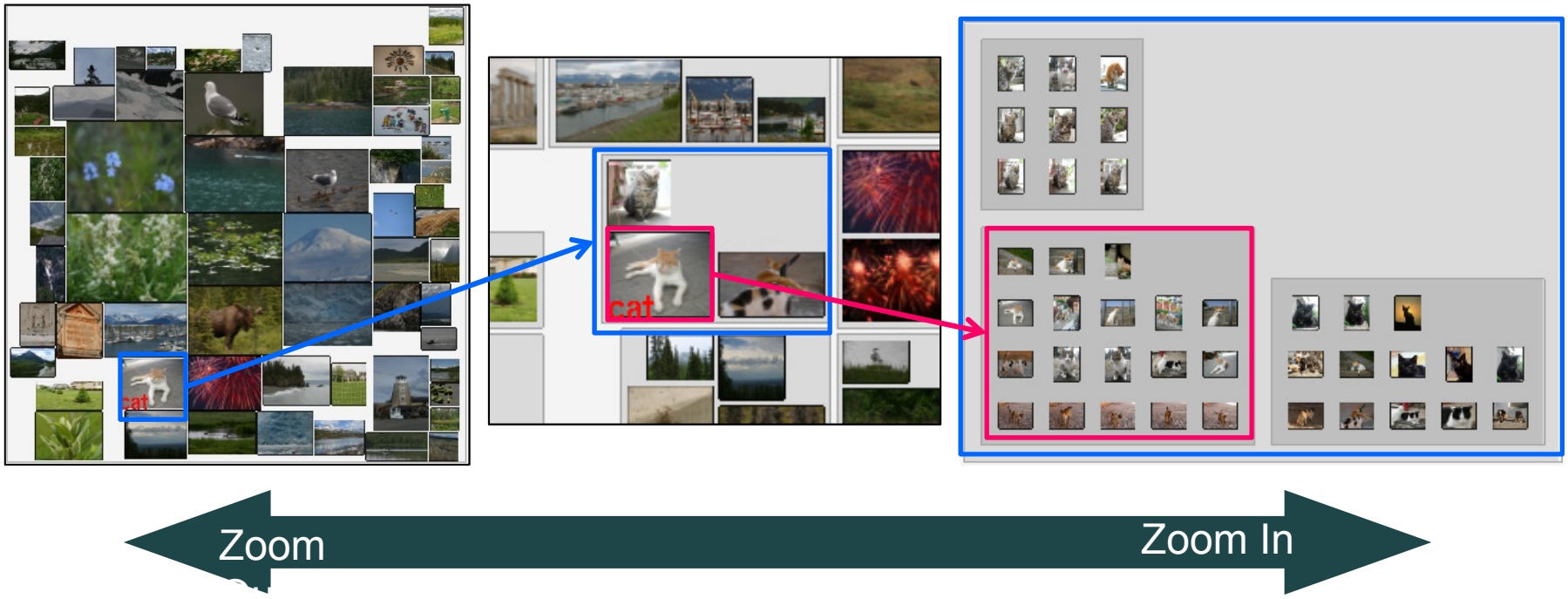
[IV08]

- Overview the photo groups first, then zoom in
  - [Zoom-out] display representative photos of groups
  - [Zoom-in] display each photos in the zoomed groups



Tree visualization for photo browsing

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[TVCG04, CG&A06]

- Hierarchy representation by nested rectangles
- Mapping photos onto icons (= leaves) (for zoom in)
- Mapping photos into rectangles (= branches) (for zoom out)

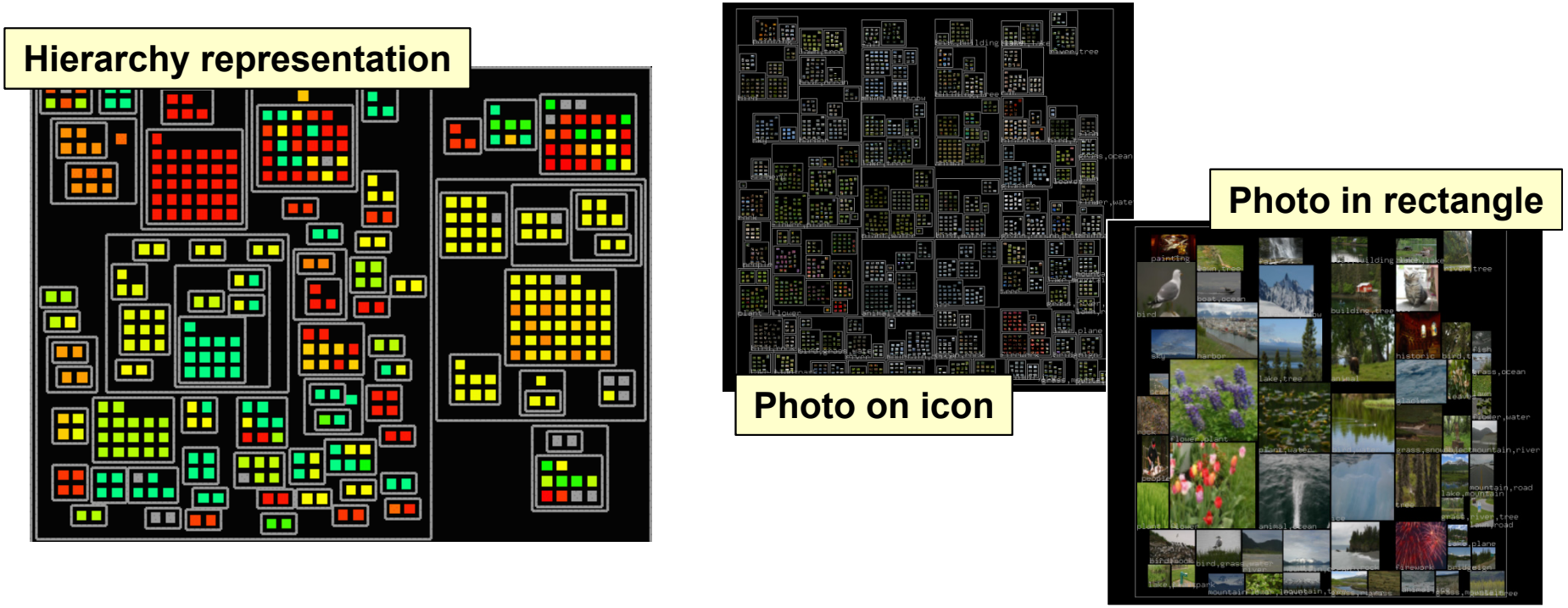

Photo collection as “life log”

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- Many photos by travel, events, ...
- Often we reflect our life from “When, Where, Who”

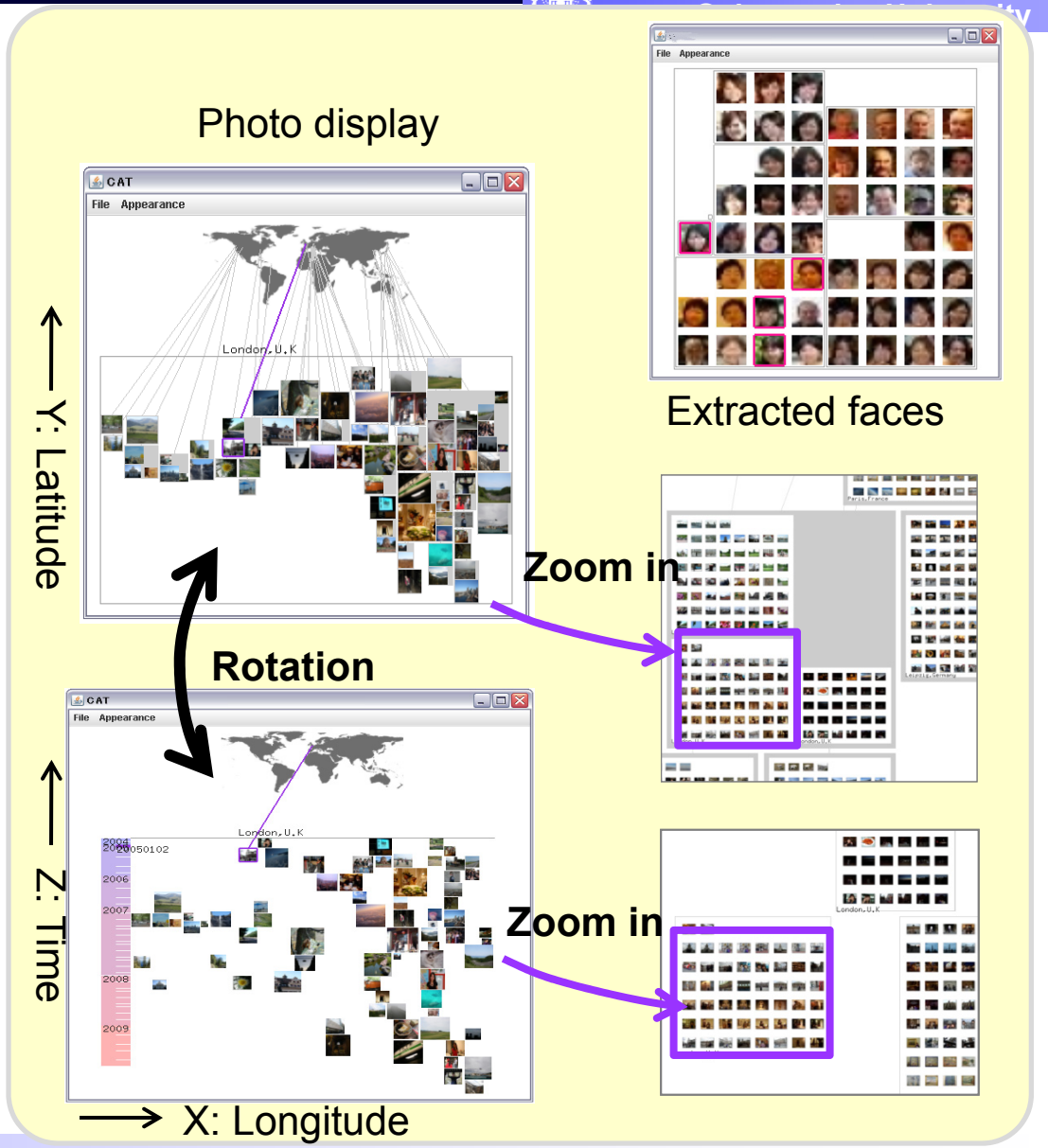
↓

- Enjoyable life reflection by looking at photos from the viewpoints of “When, Where, Who”

Photo browser by “When, Where, Who”

[AVI 10, ACM SAC 11 etc]

- Photo display based on time and place
- Smooth interaction (Rotation, zoom)
- All-in-one display of faces in the photos
- Photo discovery by interaction among time, place, and face



Life log of a student (1/2)

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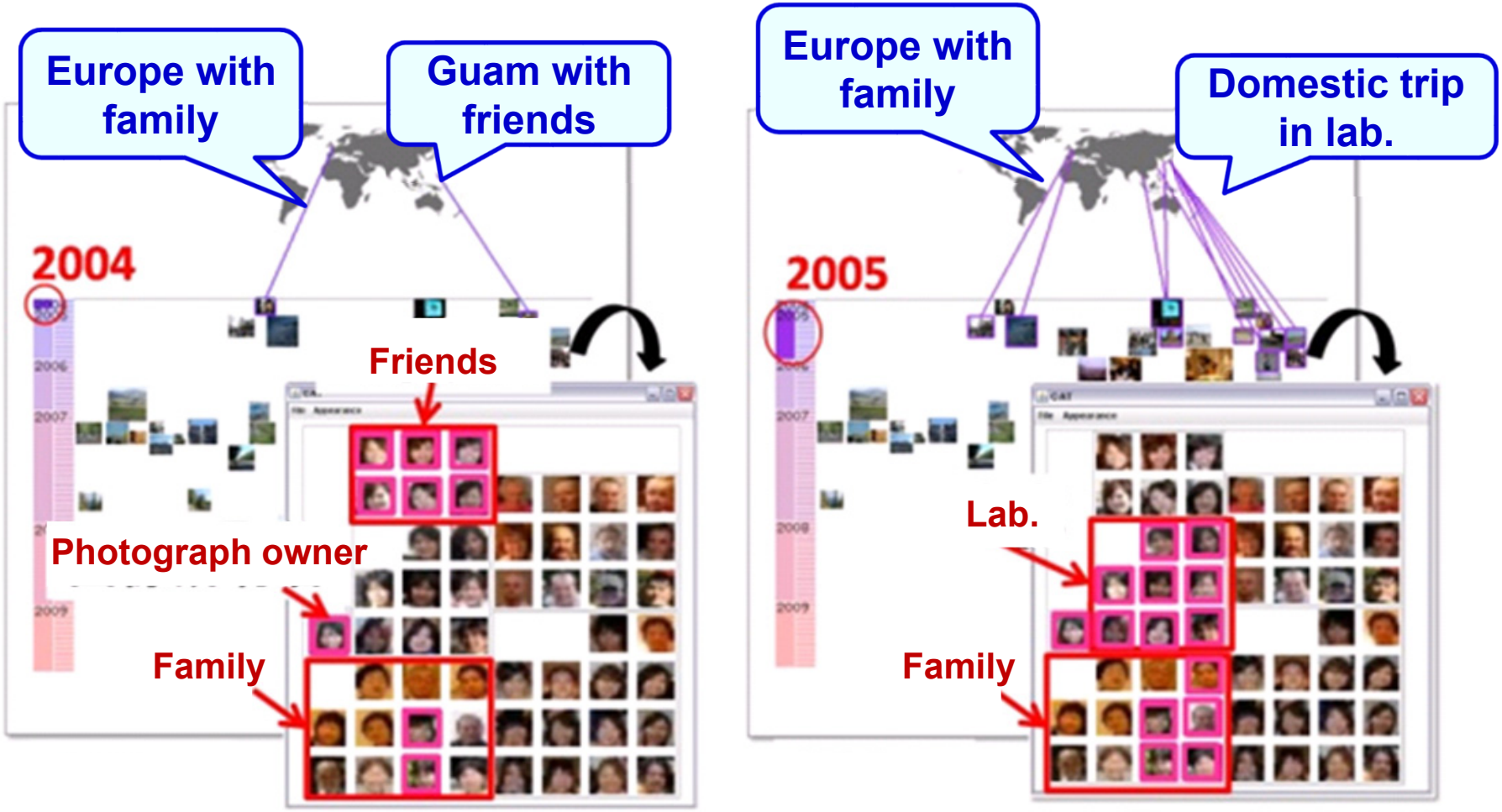
[AVI 10, ACM SAC 11 etc]



Life log of a student (2/2)

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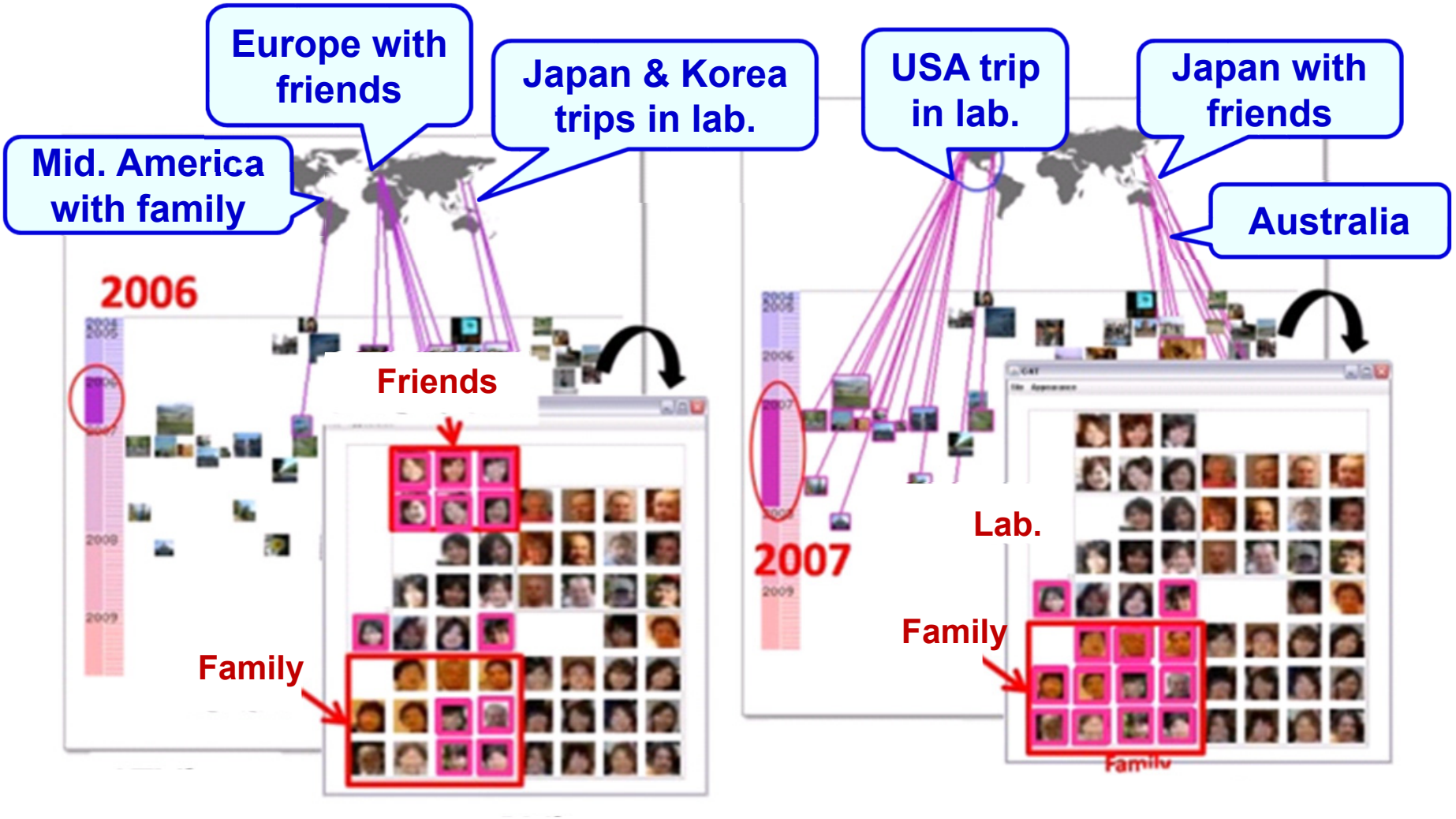
[AVI 10, ACM SAC 11 etc]



Part II:
Music browsing

Music browsing tools in my lab

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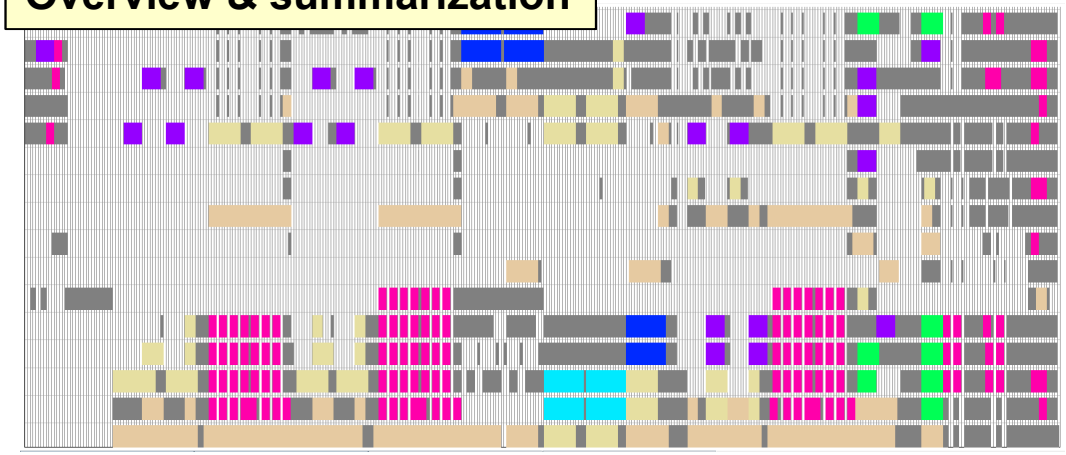
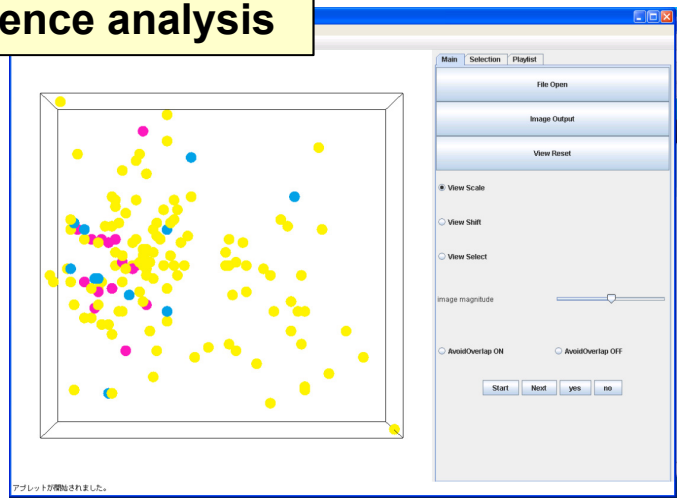
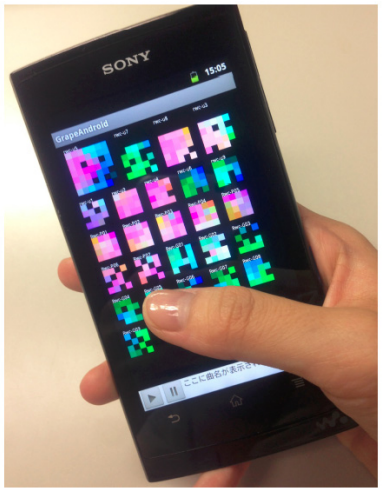
Overview & summarization

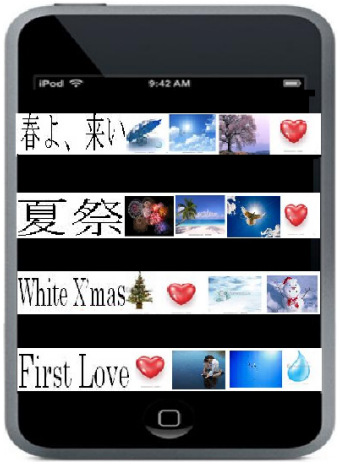


Recommendation & preference analysis



Visual user interface





Music browsing tools

- Quick finding & understanding before listening
- Goal & purpose
  - [Daily use] search, recommendation, …
  - [Expert use] education, practice, performance, …
- Input data
  - Audio (WAV, MP3 …) or Note (MIDI …)
- Musical genre
  - Pops or Classics
  - With vocals or Without vocals

Music browsing tools in my lab

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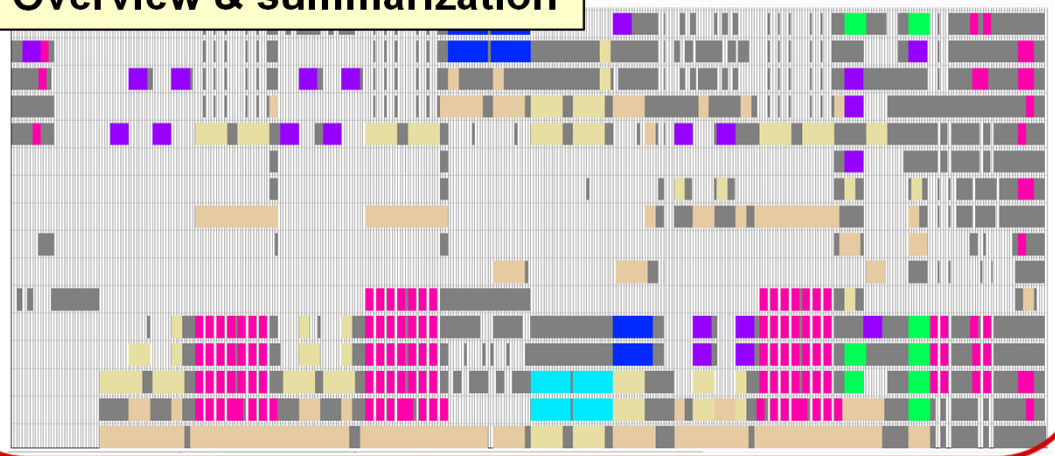
Ochanomizu University

Overview & summarization



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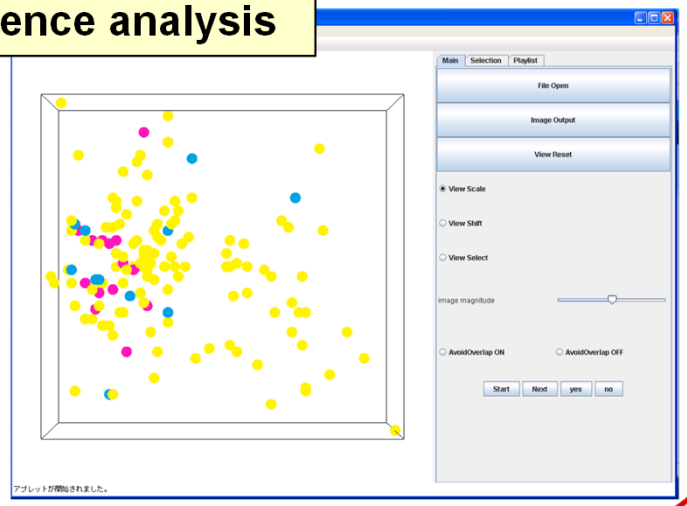
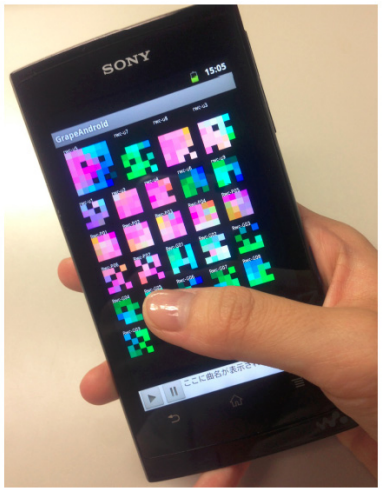
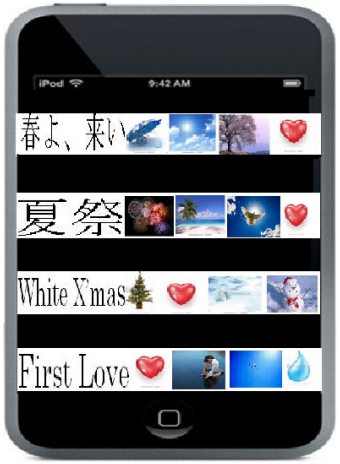


Visual user interface





Visualizing structure of orchestra music

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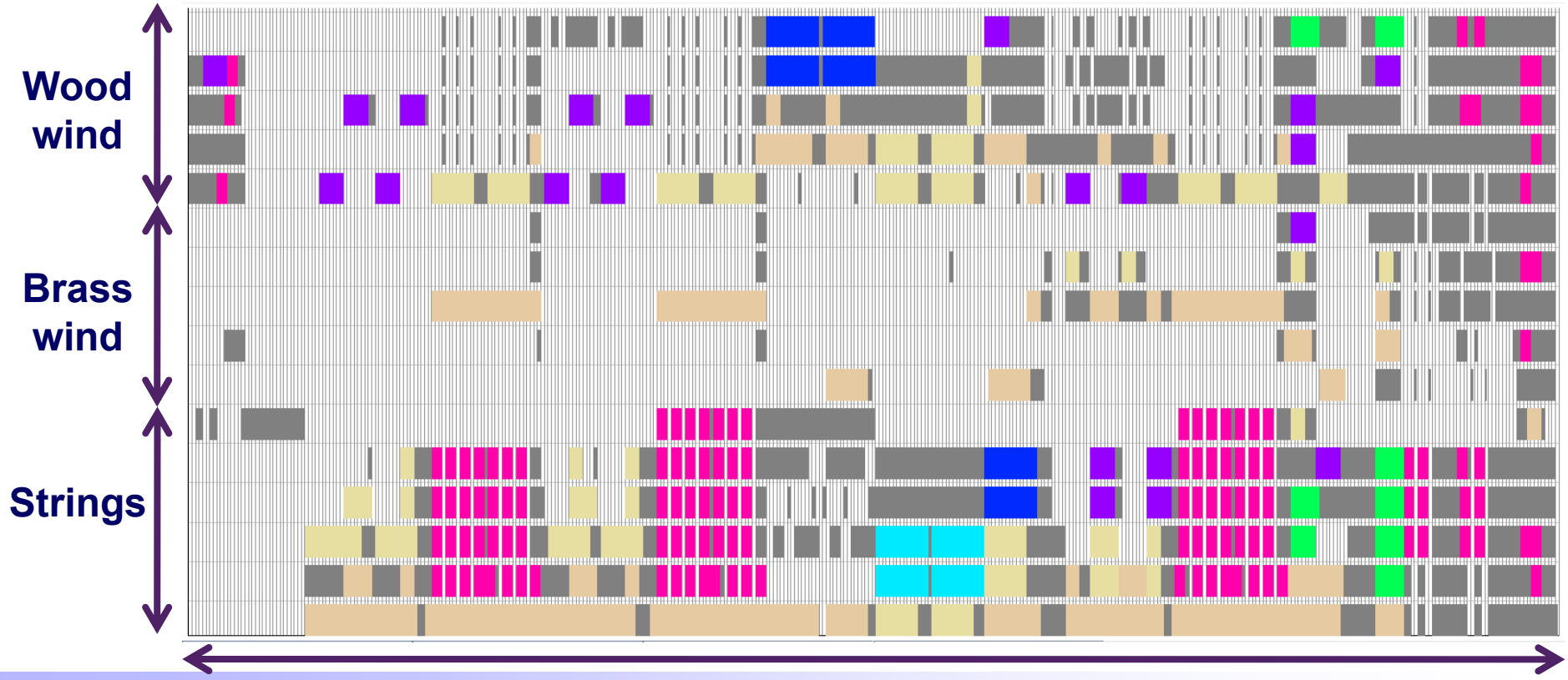
[IV 11]

- Summarization of classical music score which has tens of note tracks
- Coloring of note blocks based on melodies



Example: “Valse des fleurs”

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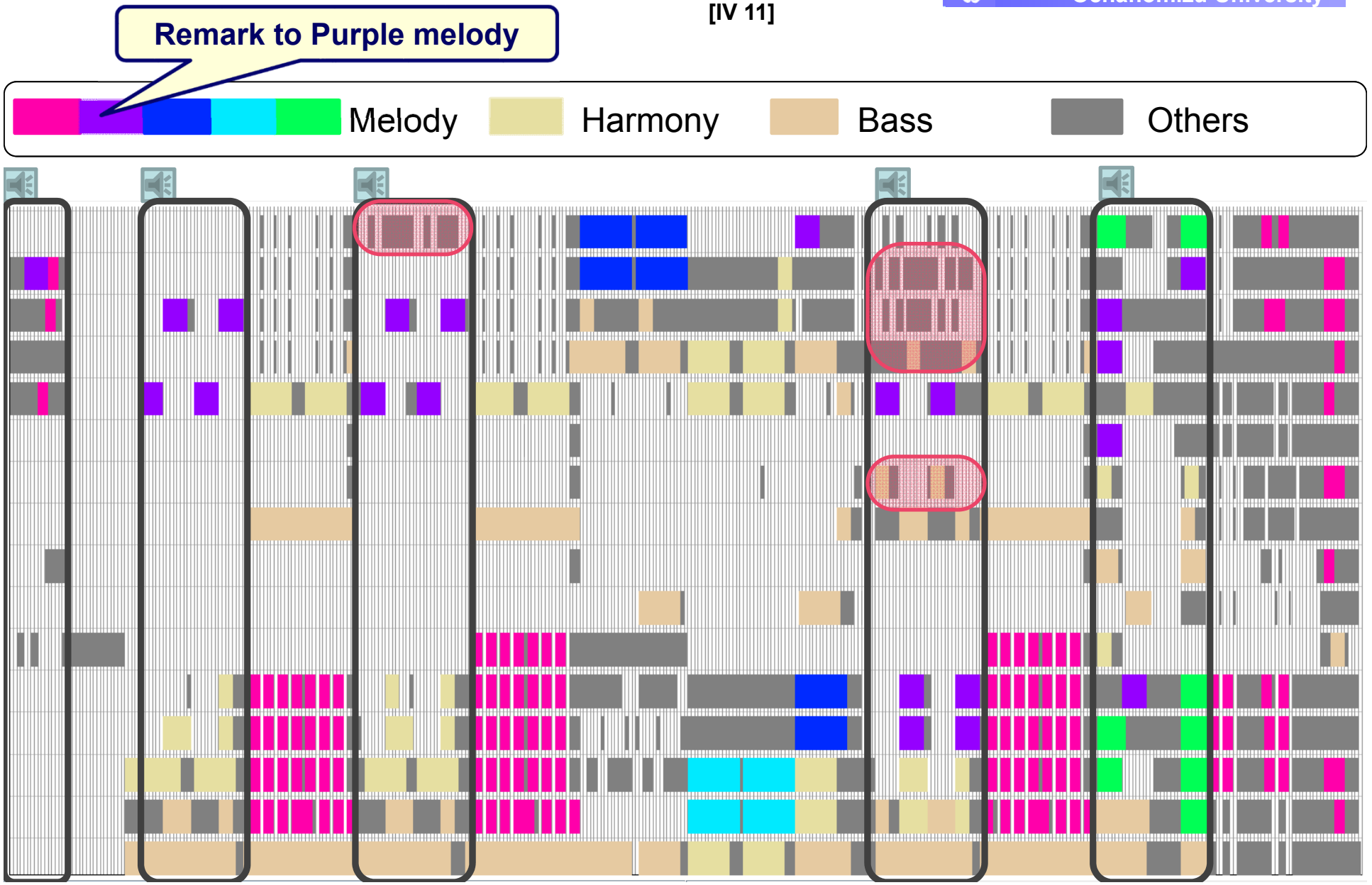
[IV 11]



Condensation (= Vertical compression)

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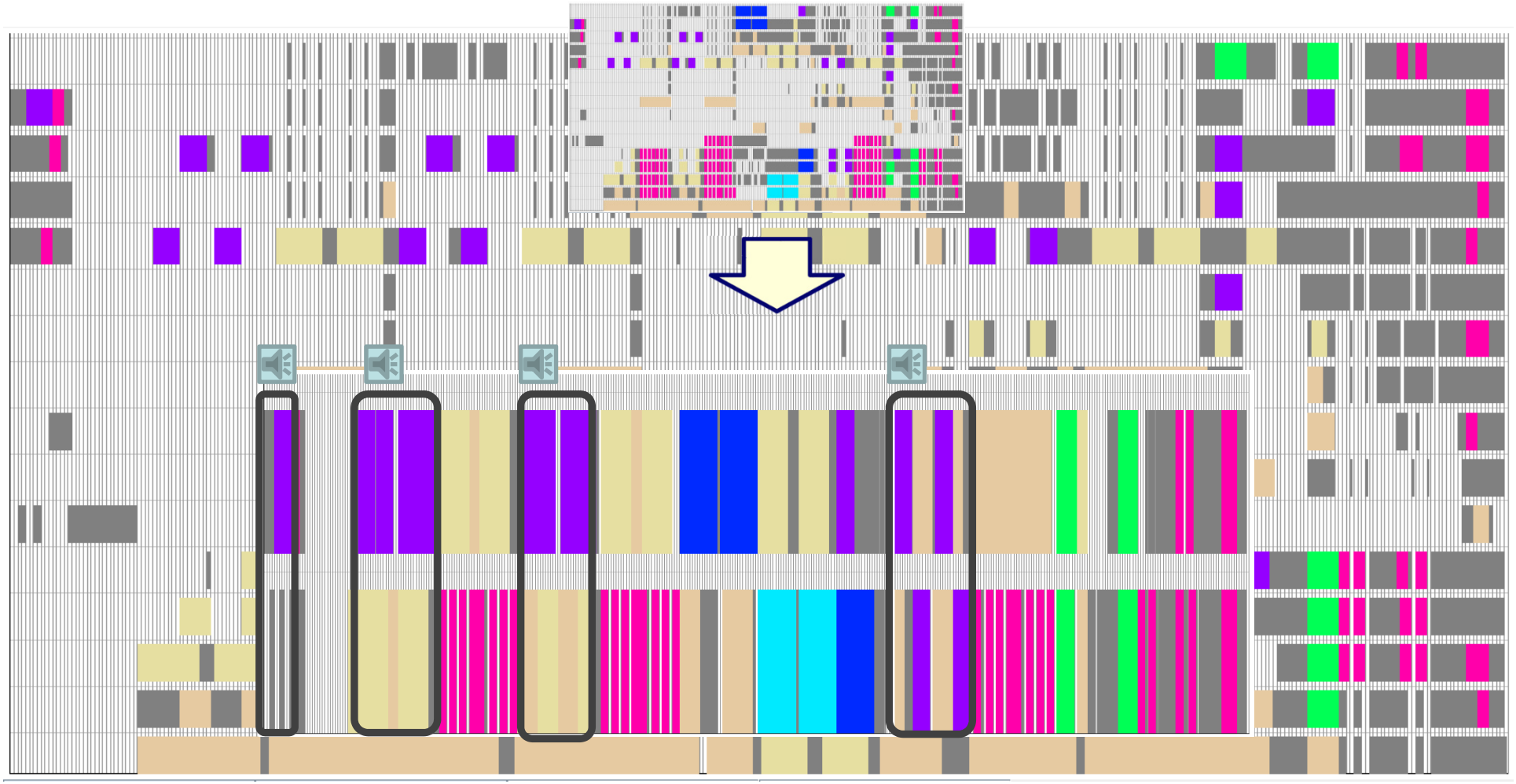
[IV 11]

- Reduce the number of tracks while preserving important melodies



Condensation (= Vertical compression)

Itoh Laboratory,
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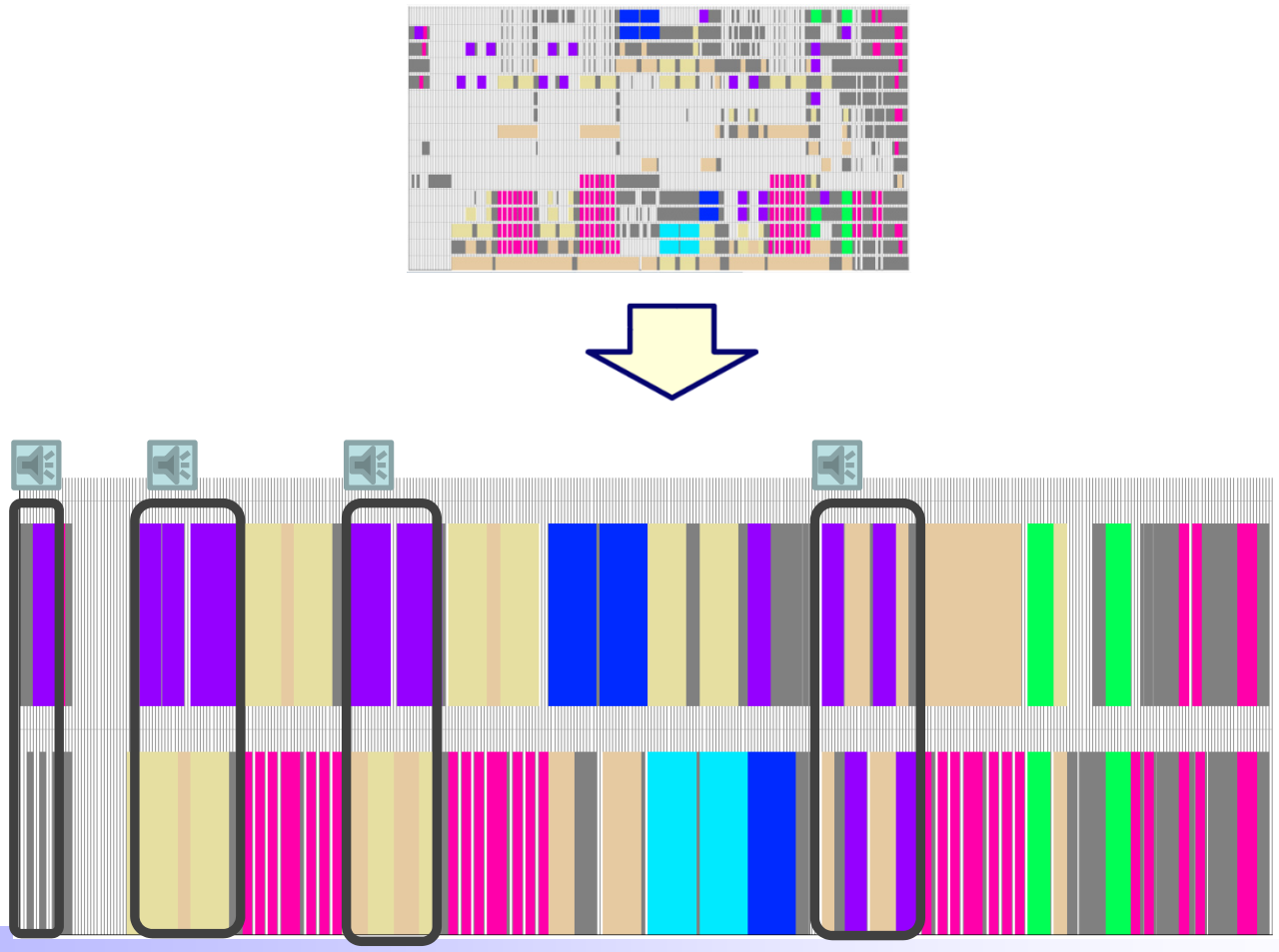

Visual Music Recommendation

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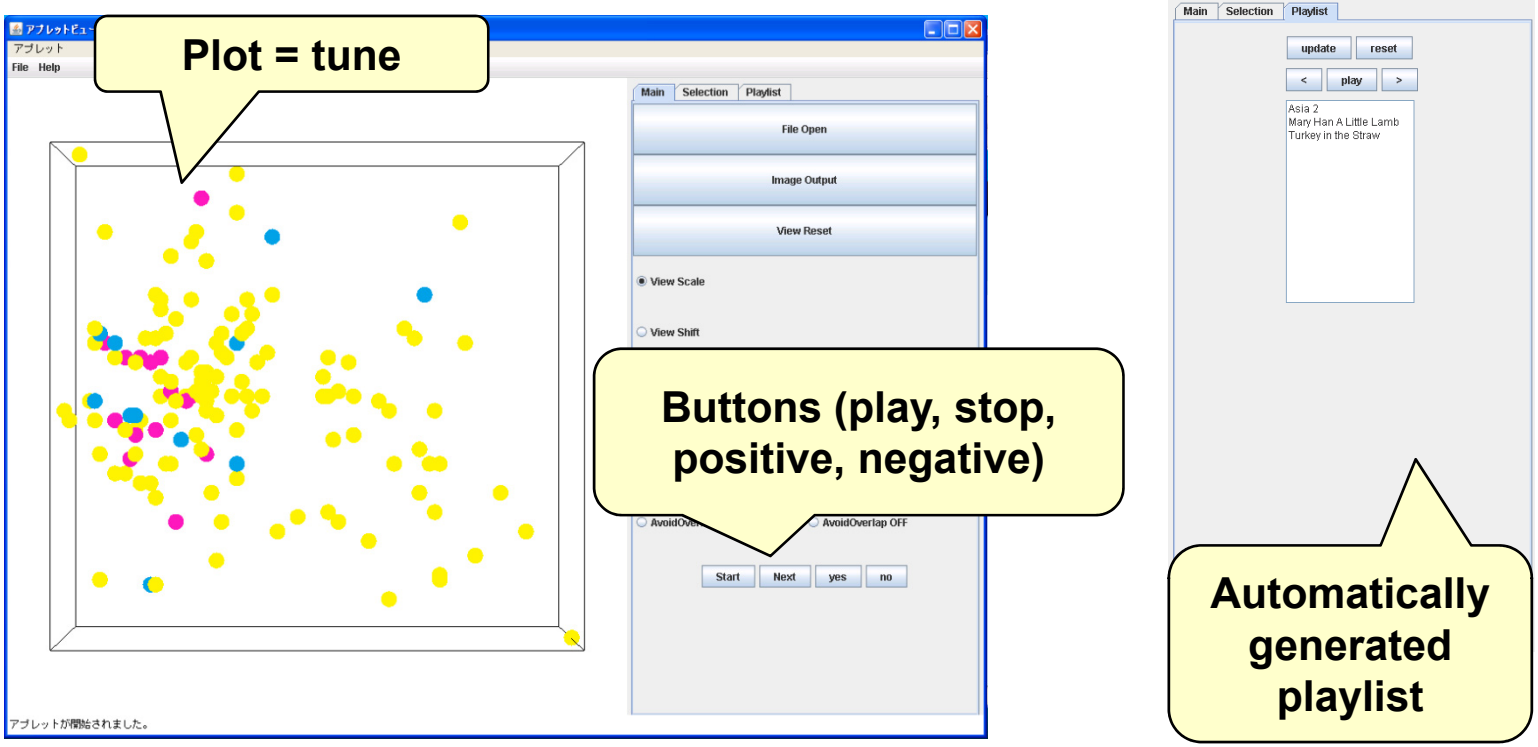
[VINCI11]

- Input evaluation
  → Learn & recommend preferable tunes



Recommendation patterns

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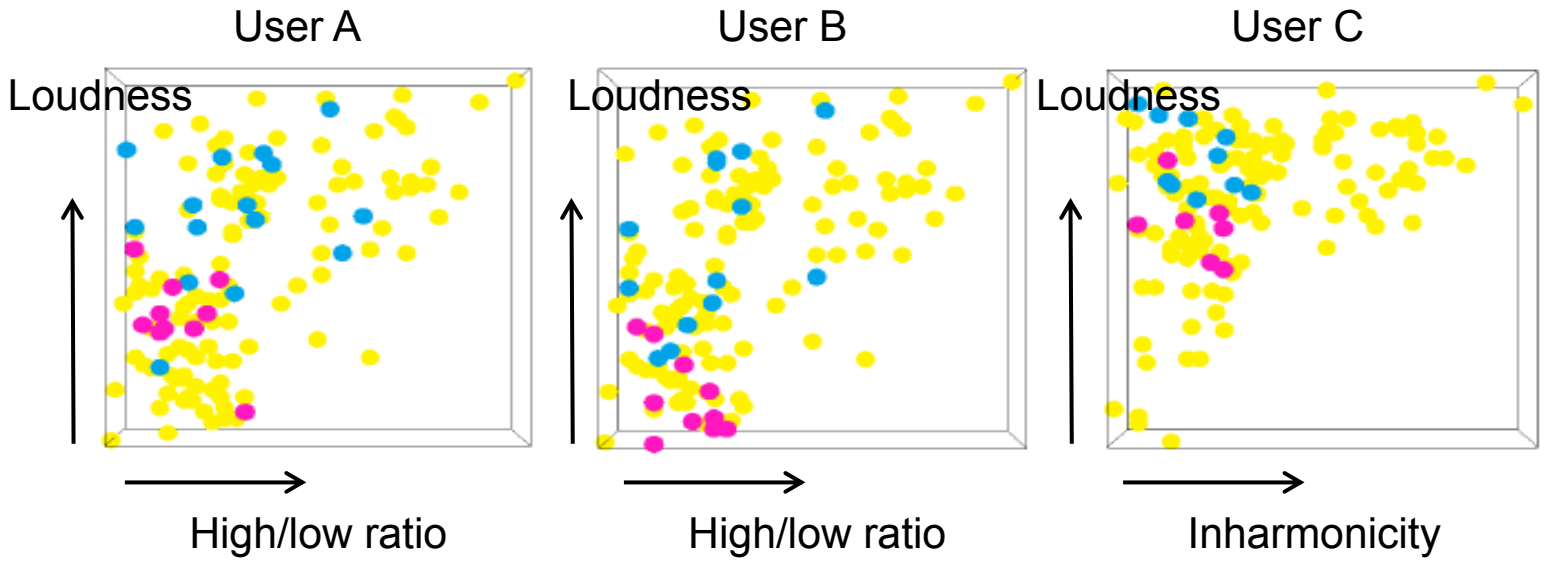
[VINCI11]

- Users A&B have similar preferences
  - Analog sounds
  - Simple arrange
- User C has much different preference
  - Low inharmonicity



Conclusion

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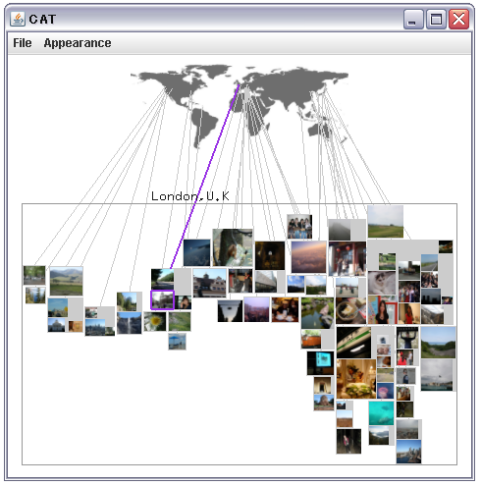
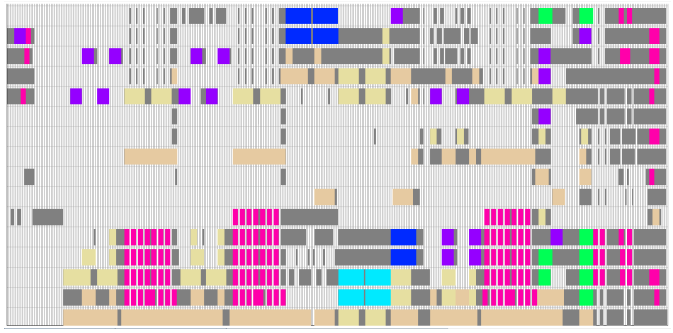
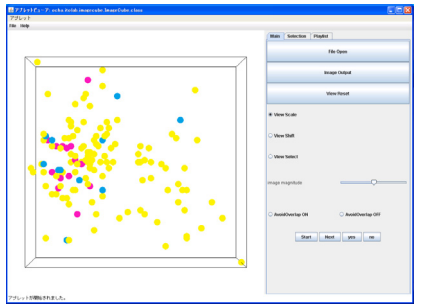
- Photograph browsing
  - Zooming interface **[Tree vis.]**
  - Meta-data based structuring
- Music browsing
  - Summarizing scores **[Time-varying vis.]**
  - Recommendation with scatterplots **[Multi-dimensional vis.]**







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