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Adaptive lookahead planning for performing music composition

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Context

- Creating music amounts to write (compose) and perform (live)
- Composition can last an indefinite time
- Performance has a timeline defined during composition

Adaptive lookahead (dynamic vs. static)

Dynamic object

Static object

likely to be modified while being rendered
will never change

Planning of a musical object

Dynamic lookahead extension

Plan «just in time» in a time-window
Possibility to extend this time-window

short anticipation
larger anticipation

Planning and scheduling operation scheme

Data structure

Object to plan translation

Environment & Compositional Processes

- Computer-music environment: react to user inputs
- Process tasks: non preemptible, best-effort
- Integrate results in the data structure
- Notify the planner about editions

Planner

- Register playing objects
- Store time-windowed plans
- Extract new plans from the data structure according to queries or notifications

Scheduler

- Synchronously render plans
- Query the planner for new plans after depletion
- Trigger compositional processes as «tasks»
- Time updates (graphics, callbacks etc.)

Example

Tasks triggering compositional processes

1 2 3 : Results of compositional processes

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