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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

Compositional processes that generate or modify musical structures can be integrated in musical objects, and occur during the performance

Planning and scheduling operation scheme

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

Data structure

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

Results of compositional processes