

Live Repurposing of Sounds: MIR Explorations with Personal and Crowdsourced Databases

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Abstract

In this paper, we explore the use of MIR to retrieve and repurpose sounds in musical live coding. We present a live coding system built on SuperCollider enabling the use of audio content from online Creative Commons (CC) sound databases such as Freesound or personal sound databases. The novelty of our approach lies in exploiting high-level MIR methods (e.g., query by pitch or rhythmic cues) using live coding techniques applied to sounds. We demonstrate its potential through the reflection of an illustrative case study and the feedback from four expert users.

Block Diagram

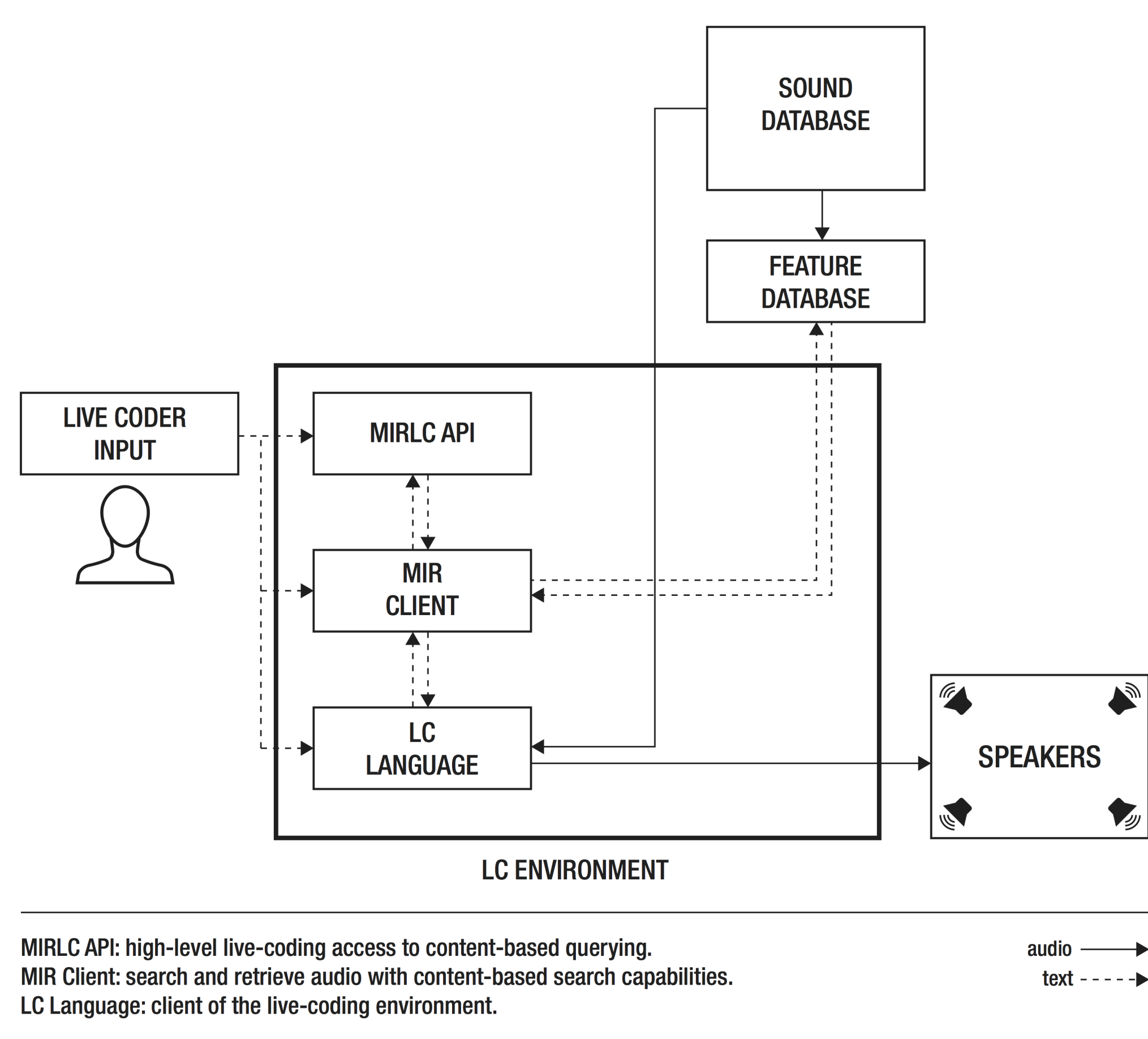


Fig. 1: Block diagram of audio repurposing applied to live coding.

MIRLCRep Front-End

<http://github.com/axambo/MIRLC>

- User interface layer on top of the MIR client (MIRLC API).
- Live coding environment that allows to load sounds and manage the resulting buffers.
- Human-like queries (both content-based and text-based) and real-time performance capabilities (e.g., playback controls).

Back-Ends

<http://github.com/flucoma/FluidSound>

- MIR clients: Freesound quark (crowdsourced Freesound database), FluidSound quark (personal database).
- Freesound back-end allows textual and content-based queries to the Freesound database.
- FluidSound back-end allows content-based queries using Freesound technologies on a local database.
- Content-based queries: similarity, target features, feature ranges.
- JSON results converted to SuperCollider objects.

Case Study: Own Insights

Objective

Describe the design decisions from the first author's experience as an autoethnography during the development process of the module retrieving sounds from Freesound (crowdsourced database).

Round 1: Using tags and similarity

- Advantages: Similarity queries gave musical consistent results.
- Disadvantages: Uncontrolled random results.

Round 2: Human-like queries and content-based filters

- Advantages: The combination of metadata with audio content analysis provided flexibility and variation to the performance.
- Disadvantages: The production of musical structure and transitions demanded manual labor and was time consuming.

Users' Feedback

Objective

Get feedback from practitioners of using both local and crowdsourced databases and describe interesting behaviors that emerged from the use of this system to improve the system's capabilities beyond own practice.

Study design

Tool tested with 4 expert musicians (10' composition during 1 single session).

Findings

- Content-based queries were preferred: getting similar sounds (local databases), content with filter (crowdsourced databases), sound by tag (crowdsourced databases).
- Experimentation of the limitations of the tool and subverting high-level descriptors was sought by the participants.
- Querying crowdsourced sounds as a non-linear process (varied downloading times).
- Retrieving local sounds can be more flexible and precise due to the possibility of segmenting sounds in advance.

Future Work

- The combination of both types of databases is promising.
- Documenting useful combination of queries (e.g., multiple query parameters at once).
- Conducting more case studies and workshops (e.g., participatory design sessions).

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