RAAPT: Rhythmic Automated Audio Processing Templater

The RAAPT project generates rhythmic musical structures by assigning pre-made templates to ecological soundscapes. By applying structural templates to audio clips, RAAPT creates an automated and generative music system capable of transforming any sonic material into rhythmic, musical instruments.

By choosing start and end points within an audio file and selecting frequency ranges to pre-existing instrument frequencies, the program identifies which sounds are the best matches for predefined patterns.

Drum samples and lead sounds are extracted from the source audio by matching regions to a specified amplitude and frequency range. By shaping the sound to match different waveforms, such as a kick drum or hi-hat, a bank of drum samples is automatically generated. A granular synthesizer processes the same audio file and creates a bank of lead samples that are used as melodic elements within a piece of music.

All samples are then run through effects and stored in a post-processed sample bank.

Finally, a sequencer organizes all the drum and lead sounds and maps them to MIDI presets chosen from a bank of MIDI loops.

The RAAPT project can generate multiple versions of the same piece of music from any raw audio file due to non-deterministic properties of selecting sample length, location, and effects. This approach decouples the composition of musical structure from the traditional orchestration of voices and instruments. Composers using RAAPT can approach creating new material in exciting and experimental ways.