

REPRESENTATION AND INDUCTION OF MUSICAL STRUCTURES FOR COMPUTER ASSISTED COMPOSITION

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Abstract

Computer assisted composition appears to be an interesting domain for Machine Learning for various reasons: the open-ended nature of music; the differences between an expert and a composer, who is not attempting to reach both truth and formalisation but artistic completion; the multilayered, multistructured nature of the music, together with the importance of time. This makes for different demands on machine learning, compared with more rigid domain.

We use a simple (functional) way to type logical terms that fits with time-embedded domains. The types are given abstract attributes such as 'circularity' that make sense for group-theory related domains. Definitions are given for type composition operators and for type relations. This representation is then used by some simple heuristics for building new types. This stage is essential in the formalisation of the language used by the composer to define his musical interesting structures.

A form of 'rules to be looked for' is specified. The rules are extension or variation of g-clauses, using typed terms. At present, two operators has been defined for learning new rules, close to Buntine and Muggleton's inversed resolution principle. An important point about this kind of approach in this particular class of domain is that the composer cannot judge wether or not a substitution is correct, although the algorithms and the typed nature of the terms cut down the search space.

Reference

Courtot F. Representation and machine learning for Computer Assisted Composition. "Musical Intelligence", *Book on edition*, AAAI press, Menlo Park, California, 1991.