

Automated generation of contrapuntal musical compositions using probabilistic logic in Derive.

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In this work we present an application developed in Derive 6 to compose counterpoints for a given melody (“cantus firmus”). The result is non deterministic, so different counterpoints can be generated for a fixed melody, all of them obeying classical rules of counterpoint. It is also possible that the counterpoint could not be generated, in this case, backtracking techniques have been implemented in order to improve the likelihood of obtaining a result. The contrapuntal rules are specified in Derive using probabilistic rules of a probabilistic logic. The counterpoint can be generated of both first and second specie. The obtained results had been checked by different expert musicians (Conservatory of Music’s teachers) and all of them said that the automated obtained results are excellent. Even some of the teachers affirmed that, in some cases, the counterpoint obtained were even better than the one they had composed for the melody.

So, the work developed can be summarize in the following steps:

1. Development of a probabilistic algorithm in order to obtain a non deterministic counterpoint for a given melody.
2. Implementation of the algorithm in Derive 6 using a probabilistic Logic.
3. Implementation in Java of a programm to deal with the input (“cantus fimus”) and with the output (counterpoint). This program also allows to listen to the result obtained.