# An Intelligent Musical Rhythm Variation Interface

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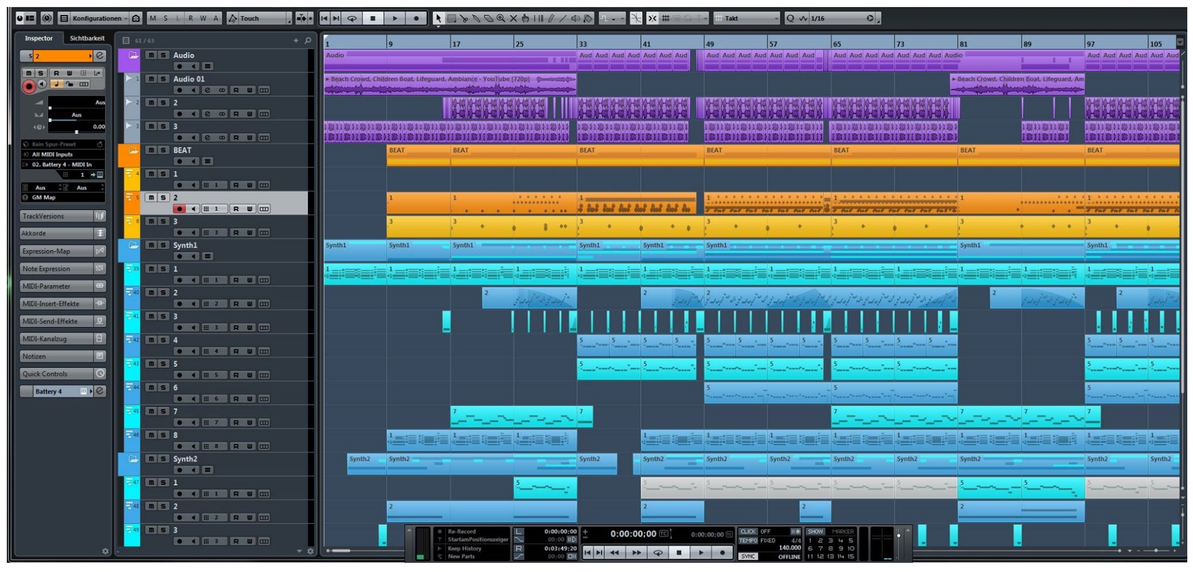
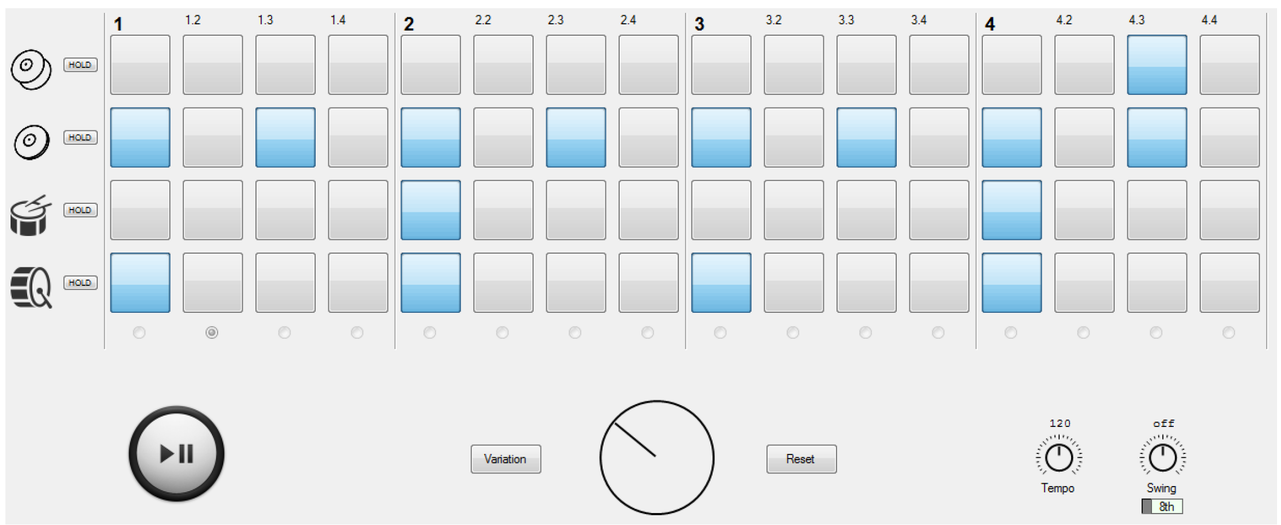
## 1 introduction

- drum tracks in electronic dance music (EDM) arrangements are usually built from drum patterns from a drum pattern library or manually composed patterns
- manual composition and creating variations is usually a cumbersome task
- in this work an intelligent agent to improve the workflow for this task is introduced

screenshot of an EDM track in a DAW



screenshot of prototype




## 2 prototype

- step sequencer like interface to enter seed patterns and visualize pattern variations
- controls for playback, pattern variation, as well as tempo and swing
- MIDI input and output for easy integration

## 3 variation algorithm

- as variation method a restricted Boltzmann machine (RBM) is used
- the RBM is trained on a data set of ~16,000 EDM rhythm patterns
- to create variations the seed pattern is entered in the visible layer of the RBM and variated using Gibbs sampling

## 4 evaluation

- qualitative interviews with ten experts
- five aspects were evaluated (see evaluation results)
- participants were exploring the prototype in combination with a hardware controller

## 5 conclusion

- interaction with implemented prototype was well received
- produced patterns are musically meaningful
- seed patterns untypical for EDM yield unexpected variations
- participants liked the idea of using the prototype in the studio but demanded additional features for the context of live environments

evaluation results

| aspect | positive comments |
|---|---|
| seed rhythm is preserved | 7 |
| patterns are meaningful | 9 |
| prototype interaction | 8 |
| would use live | 6 |
| would use in studio | 9 |

www.giantsteps-project.eu

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