A computer algorithm that mines rap lyrics to create its own song

22 May 2015, by Bob Yirka

The research consisted of gathering over 10,000 rap songs, with over 100 artists represented and putting the lyrics into a database. Then, routines were written and executed that looked at rhyming in the songs, most particularly those called assonance, which is where similar vowel sounds are repeated, e.g. crazy and baby. The team found that such rhyming was rampant in the rap lyrics, and because of that decided to make it a feature of their song writing algorithm.

Before that algorithm could be written, however, the team had to first create a neural network to examine the lyrics in the database and to learn something about the rhyming that was present in them and where it was placed, etc. Then the algorithm was written, which works by scanning the lyrics database then using information from the neural network to pick a line of lyrics to use—over and over until a complete song has been written (16 lines).

The songs written do indeed resemble rap songs, which makes sense—all of the lines in them are from popular rap songs, but, what the songs most definitely lack, is a clear storyline, leaving them rhymey and steady, but bereft of the emotion that is the hallmark of a good rap song.


Abstract

Writing rap lyrics requires both creativity, to construct a meaningful and an interesting story, and lyrical skills, to produce complex rhyme patterns, which are the cornerstone of a good flow. We present a method for capturing both of these aspects. Our approach is based on two machine-learning techniques: the RankSVM algorithm, and a deep neural network model with a novel structure. For the problem of distinguishing the real next line from a randomly selected one, we achieve an 82 %
accuracy. We employ the resulting prediction method for creating new rap lyrics by combining lines from existing songs. In terms of quantitative rhyme density, the produced lyrics outperform best human rappers by 21%. The results highlight the benefit of our rhyme density metric and our innovative predictor of next lines.

Via Arxiv blog

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