**DJnet: A Dream for Making An Automatic DJ**

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**Introduction**

We present a research project called **DJnet**, whose goal is to make an fully-automatic DJ using deep learning. We want to let computers learn the following DJ skills:

- **Music Medley** (compose a song from parts of existing pieces)
- **Music Mashup** (blend two or more pre-recorded songs)
- **Music Thumbnailing** (extract a short snippet that represents a whole song, as Figure 1 exemplifies)
- **Electronic Dance Music Genre Classification** (differentiate sub-genres of EDM)
- **Electronic Dance Music Generation**

We demonstrate the research results of our two recent works **Music Thumbnailing** [¹] and **Music Medley** [²]. We invite you to appreciate and dig deeper in DJ music!

**Project website:** [https://remyhuang.github.io/DJnet/](https://remyhuang.github.io/DJnet/)

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**Music Thumbnailing**

Main ideas of our approach:

- Chorus is usually the most memorable and emotional
- Without annotations of the chorus sections of any song, we extract a music snippet of a song that happens to correspond to the song’s chorus section by learning from emotion labels
- The key is to apply **attention mechanism** to a convolutional neural network (CNN), as Figure 2 shows
- Not only learn to predict music emotion, but also know where the novel parts are

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**Music Medley**

- **Music puzzle games**: we formulate the task of assembling multiple non-overlapping music fragments in proper order
- **Similarity embedding network**: learn patterns from the similarity matrix of a pair of music fragments, as Figure 3 shows
- **Unsupervised learning**: any music collection can be used
- **Fitness**: pick the ordering with the highest fitness score

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**Reference**
