1. **Memory And Melodic Density: A Model For Melody Segmentation**
2. **Unsupervised Learning Of Melodic Segmentation: A Memory-based Approach**

These two papers are from the same author and both of them are about melody segmentation. From my point of view and from my experience, one person who has not much musical training, he still can find the boundary from one piece of music. That means, I guess, melody segmentation may not really depend on musical knowledge.

In the first paper, the author summarized the shortcomings of one previous melody segmentation method, which is LBDM, and then he gave his own method, MDSM. Instead of measuring the accumulated boundary strength and identifying local maxima, this method was trying to calculate the accumulated melodic cohesion between pitch intervals and identify the local minima. Both methods extracted some intrinsic information and then they did some calculations to get quantifiable results. It is reasonable that the boundary should match the peak or the minima.

Pitch intervals were used in this paper again and I also remember that this kind of information has been used in quite a few other approaches. Moreover, in this paper, it was used with the time difference between two notes in a melodic function. This function made sense to me but more work needs to be done because maybe there are some alternatives that can replace such a function.

The second paper used a probabilistic model to find the melodic boundaries. PS, which is pitch step, was used again. Intuitively, pitch step can somehow give some clues of the

melodic boundaries. The other information was DR, which was duration ratio. It was particularly important since in an expressive performance the durations of MIDI events do not correspond exactly to the notated durations. Hence, the author used ratio to represent the relation in the length between two consecutive notes.

I should say his work is somewhat creative because in his paper, the method of processing music was similar to that in natural language processing. Markov model and entropy were used in music research and that gave me one idea that music could be processed as a kind of audio signal, it also could be processed as a kind of language. More ideas might be borrowed from NLP field, especially for the semantic research in music.

In terms of the results in the second paper, I think the author should do more experiments in the future to test this method. I think the test sets may be too small to support his conclusions.

3. Integrating Segmentation And Similarity

4. Optimising Parameter Weights In Models For Melodic Segmentation

These two papers are also about melody segmentation. In the first paper, an Integrated Segmentation and Similarity Model (ISSM) for melodic analysis was introduced. The ISSM is an extension of a system for rhythm analysis and this paper covers the model structure and the features relevant for melodic and motivic analysis. The system was a rating system and it created all possible segmentations and chose the one that received the best rating.

The paper is somehow well-organized but it was abstract. The reason might be the restriction of the length of the paper. The author showed his work briefly in part 2 but he did not explain them in detail. Similarly, he showed the whole process of interpretation ratings but after reading it, I still had not a quite clear impression on his work. Although I saw his formulations of how to calculate the contour difference value, I do not know how he formulated it.

The description of the neural network made me interested. It was a good way to use neural network to describe the complex relations between input and output. Here, in this paper, the input was those data after extracting information from MIDI and the output was the rating results. However, the author did not know what kind of mathematical formulation should be used or whether there were some mathematical models that could describe them. So he used the rules from expertise to make a fuzzy system. However, I do not agree with his training process because the training set was too limited. And that may make his system lack generality. The author said that after the training, the system could successfully output the correct results for the training data. I think that's not a powerful proof because it was natural that the model could output right results based on the data that was used in training.

The second paper, in my point of view, was the extension of the first paper. The author first introduced some influential factors for segmentation and then, he carried out an experiment to test the relationship and relative importance between them. The first experiment was creative and the results were convincing. From the graph the author showed to us, we could tell that a linear model was really not sufficient.

However, when the author used the adaptive neural network to do the second

experiment, which he believed was better than the linear model, the results were disappointing. Segmentations by the subjects differed largely and the system could not be trained successfully using the data directly. After introducing the concept of compatible segmentations, the author showed us the refined results.

I wondered why the author did not add the compatible segmentation in the training of the network. Maybe there were some difficulties in doing that but I think in the future, the model should do that in order to avoid some additional manual work. By doing this, more efficient rules should be used. The other problem for the model was the same as the problem in the first paper, the training set should be larger.