A Choreographic Authoring System for Character Dance Animation Reflecting a User’s Preference

**Goal**
To realize a choreographic authoring system for character animation reflecting a user’s preference with less burden for him/her.

**Introduction**

- **We focus on two issues:**
  1. How can we enable a user to easily search for his/her preferred motion?
  2. How can we semi-automatically synthesize a sequence of dance?

- **Related work**
  1. **Motion retrieval**
  2. **Dance motion synthesis**

**Automatic Synthesis of a Dance Sequence**

**Minimization of the total costs by using Dijkstra’s algorithm**

1. The rhythm of candidate dance motion segments is synchronized to that of input music by resizing of motion segments.
2. The filling clips are selected by minimizing the total cost functions

\[ C(A, B) = 1/2 \left( S_{\text{post}} + S_{\text{move}} \right) \]

- **Posture Similarity**
  \[ S_{\text{post}}(a^i, b^j) = \sum_{m_l \in A^i} \min_{k \in B^j} d(m_l, m_k) \]

- **Movement Similarity**
  \[ S_{\text{move}}(a^i, b^j) = \sum_{m_l \in A^i} \max_{k \in B^j} \sum_{m_k \in B^j} |d(m_l, m_k) - s_{\text{rel}}(m_l, m_k)| \]

3. The resulting motion sequence is acquired by connecting the motion segment sequence using cubic interpolation.

**Result and Conclusion**

- **Diversity of candidates**
  We defined the diversity of candidates as the mean of dissimilarities between each pair of six sequence candidates.

- **Resulting dance animation**
  In the dance animation synthesized without considering the connectivity of the motion segments, character’s posture rapidly changes across junctions between motion segments.

- **Conclusion**
  - The variety of candidates gradually converges as the number of feedback iteration is increased.
  - Our system can automatically synthesize a sequence of dance by analyzing the connectivity of the motion segments.
  - By this system, we can create a new dance performance for character animation reflecting a user’s preference.

- **Future work**
  - A closer evaluation of usability of our system.