Speed Writing

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1 Divide and Conquer

If you try to write a section of a paper from stretch, it will likely take you a lot of time (unless you are a very experienced writer). The primary reason is that you are trying tackle too many things at once:

- Collect relevant information from various sources.

- Construct appropriate sentences.

- Organize the sentences into paragraphs.

- Refine the paragraphs and sentences.

If you do all the above at the same time, you will be spending a lot of time switching from one task to the another task. This is not an efficient way to write.

A more efficient way to write is to divide the tasks into stages and focus on one task at each stage. Here are the possible staging of the tasks:

1. **Plan Paragraphs**
   Plan the paragraphs by identifying the topics that you need to cover in the paragraphs. Each paragraph should cover just one topic, and the topic of a paragraph should follow from that of the previous paragraph and leads to that of the next paragraph.

2. **Collect Relevant Information**
   Collect information relevant to the paragraph topics that you have planned. The information can come from various sources such as papers, books, and webpages. As you collect the information, record them and place each of them in one of the paragraphs. If you come across information is that not relevant, skip it. If you come across information that is really important but you can't put it into an existing paragraph, then you might need to create a new paragraph for it. This should be done only occasionally, especially if you have planned the paragraphs well. At this stage, you can record the information in short phrases. Don't worry about English grammar.

3. **Work on Paragraphs**
   Construct sentences that describe the information in a paragraph. The sentences that you construct should be grammatically complete. Avoid constructing long sentences because it is much harder to refine long sentences. In this stage, you do not need to worry whether

the sentences connect well in the paragraph. Just construct the sentences. You should work on one paragraph at a time. Avoid switching to another paragraph before you complete a paragraph.

4. **Refine Paragraphs**
Refine the sentences in a paragraph to ensure that each sentence follows naturally and logically from the previous sentence, and leads to the next sentence. This is the stage where you should follow the writing guide to refine the sentences.

5. **Re-connect Paragraphs**
Refine the lead sentences of the paragraphs, if necessary, to connect the paragraphs properly. If you have planned the paragraphs well in Stage 1, you might not need to spend much time do this.

2   Examples

2.1   Example 1: Music Style Transfer

Verson 1: Collected Unorganized Information

Section title: Music Style Transfer

(Paragraph 1: general intro)
Separate and recombine content and style of different music pieces.
Which content? Which style?

(Paragraph 2: fuzzy concept)
Music style is a fuzzy concept: range from high-level features (tonality, chord sequence) to low-level acoustic features (sound texture, timbre).
Ambiguity is due to multi-level nature of music. 3 levels: score, sound, performance control.
Meaning of style transfer varies depending on level of focus.
Can be confused with algorithmic composition, expressive performance, sound synthesis.

(Paragraph 3: proposed definition)
A target music whose content is to be preserved.
For now, restrict content to mean melody.
A reference music whose style is to be transferred over to the target.
In general, can have more than one reference music pieces. But can create confusion: what is the "combined" style of the references? Unclear and not specific.
For now, restrict to one reference music so that the definition is clear.
Resultant music's style is from a specific reference music.

(Paragraph 4: more details)
Relate to music composition: reharmonization, rearrangement, variation.
Reharmonization is change of chord and chord progression to generate different harmony between chords and melody.
Rearrangement may include reharmonization, paraphrasing of melody, adding or changing materials for introduction, transitions and ending.
Variation may change melody, rhythm, harmony, timbre, etc.
For music style transfer, melody should remain unchanged. This paper focuses on composition style, specifically harmony.

2

Verson 2: Refined Paragraphs

Section title: Music Style Transfer

The general concept of music style transfer, as presented in [...], refers to the separation and recombination of music content and music style of different music pieces. Specifically, the music content should come from a single target music, whose style is to be altered. The music style, on the other hand, could come from one or more reference music pieces. The recombination of the target content and the reference styles constitute the resultant music.

Music style is a fuzzy concept. It can refer to different elements of music due to the multi-level nature of music. At the level of composition, music style corresponds to the tone, chord progression, harmony between melody and chords, etc. At the level of performance, it refers to the control of the dynamics, speed, and … (fill in another non-technical term). At the sound level, it refers to the sound quality of instruments, … (fill in one or two non-technical terms). Depending of the level of focus, the meaning of music style varies.

To be specific, this QE paper defines composition style transfer as the recombination of the content, specifically the melody, of a target music and the composition style of a single reference music. The resultant music should sound musically pleasing. At present, this paper does not consider multiple reference music pieces. The primary reason is that the composition style of every piece of music is unique, especially for western classical music. For example, the composition styles of Chopin's … and … are very different even though both pieces are of the same genre (mazurkas) composed by the same composer (Chopin). Any attempt at combining the composition styles of multiple music pieces very likely result in a kind of averaged style that erases the uniqueness of specific composition style.

In music composition, there are three general ways of varying composition style, namely reharmonization, rearrangement, and variation [...]. Reharmonization changes the chords and chord progression to generate different harmony between chords and melody. Rearrangment may include reharmonization, paraphrasing of melody, and adding or changing music materials for the introduction, transitions and ending. Variation may change several aspects of music including melody, rhythm, harmony, timbre. In applying these techniques to music style transfer, they should keep melody unchanged. Among these composition techniques, reharmonization is computationally less complex. So, this QE paper shall first focus on the concept of reharmonization, i.e., changing the harmony of the target music to the harmony of the reference music. To ensure that the resultant music sounds musically pleasing, the adapted harmony will need to be adjusted to fit the target melody.

2.2   Example 2: Music Style Transfer

Verson 1: Collected Unorganized Information

Section title: Music Style Transfer

(Paragraph 1: general intro)
Alter style of a music while preserving its content.
Content and style refer to different aspects of music at different level.
multi-level nature of music. 3 levels: sound, performance, score.
score: timbre style transfer: content is performance control, style is timbre (perceptual quality of an instrument).
performance: performance style transfer: content is score, style is performance control
score: composition style transfer: content is melody, style is other score features.

(Paragraph 2: more about composition style transfer)

Relate to music composition: reharmonization, rearrangement, variation.

Reharmonization is change of chord and chord progression to generate different harmony between chords and melody.

Rearrangement may include reharmonization, paraphrasing of melody, adding or changing materials for introduction, transitions and ending.

Variation may change melody, rhythm, harmony, timbre, etc.

For music style transfer, melody should remain unchanged.

(Paragraph 3: proposed topic)

This paper focuses on composition style, specifically harmony.

A target music's content, i.e., melody is preserved.

A reference music whose style is to be transferred over to the target.

In general, can have more than one reference music pieces. But can create confusion: what is the "combined" style of the references? Unclear and not specific.

For now, restrict to one reference music so that the definition is clear.

Resultant music's style is from a specific reference music.

(Paragraph 4: contrast with music style translation)

Related but different.

Alteration of all aspects of style while preserving melody.

Do not distinguish different level of music representation.

Style change is not specific to any one level. Deep neural network methods.

Verson 2: Refined Paragraphs

Section title: Music Style Transfer

Music style transfer is an approach to automated music generation that alters the style of a music piece while preserving its content [...]. Due to the multi-level nature of music, content and style at different levels refer to different aspects of music. At the lowest level of sound, music style refers to timbre, which is the perceptual quality of sound produced by various musical instruments, and music content is the performance control of music including dynamic and speed. Thus, this kind of music style transfer is called timbre style transfer. At the middle level of performance, style refers to the performance control of music, and content refers to the content of music score, giving rise to performance style transfer. At the highest level of music score, content refers to melody, and style includes other elements of the score. This is called **composition style transfer**.

There are three composition techniques that can alter a piece of music, namely reharmonization, rearrangement, and variation. Reharmonization changes the chords and chord progression to generate different harmony between chords and melody. Rearrangment may include reharmonization, paraphrasing of melody, and adding or changing music materials for the introduction, transitions and ending of music. Variation may change several aspects of music including melody, rhythm, harmony, timbre, etc. In applying these techniques to music style transfer, they should keep the melody of a target music unchanged.

This QE paper focuses on a sub-task of composition style transfer, specifically transfer of harmony. Given a target music, its melody is preserved whereas its harmony is altered by transferring from a reference music. The resultant music should sound musically pleasing. At present, this paper does not consider multiple reference music pieces. The primary reason is that the composition style of every piece of music is unique, especially for western classical music. For example,

the composition styles of Chopin's ... and ... are very different even though both pieces are of the same genre (mazurkas) composed by the same composer (Chopin). Any attempt at combining the composition styles of multiple music pieces very likely result in a kind of averaged style that erases the uniqueness of specific composition style.

There are existing works that are related to but different from music style transfer [...]. These methods alter all aspects of style of a music piece while preserving its melody. They are achieved primarily by deep neural networks that learn the statistical characteristics of the styles of training examples. Their style change is not specific to any music level but includes all levels without distinguishing between various aspects of style. To differentiate them from music style transfer, these methods are called **music style translation**.

2.3 Example 3: Emotion Models

Verson 1: Collected Unorganized Information

Section title: Emotion Models

(Paragraph 1: general intro)
Emotion is associated with feeling and psychological activity.
Emotions can be defined as a positive or negative experience that is associated with a particular pattern of physiological activity.
Modelling or classification of emotion is important in psychology.
2 models of emotion: discrete emotion categories, dimensional emotion model.

(Paragraph 2: discrete categories)
Small number of discrete categories: Tomkins 1962 8 basic emotions, Izard 1993 12 emotions.
Humans have innate set of basic emotion.
Discrete because believed to be distinguishable by facial expressions.
Fundamental the same for all individuals regardless of ethnic and cultural differences.
Popular example: Ekman 1992 6 categories.

(Paragraph 3: dimensional model)
Emotion is described by two or three dimensions.
Emotion is a position in the 2-D or 3-D space.
2-D space include valence and arousal.
Valence measures the pleasure or displeasure, positive or negative feeling.
Arousal measures how aroused or calm is the emotion, energized.
3-D space adds dominance.
Continuous variation.

Verson 2: Refined Paragraphs

Section title: Emotion Models

Affective computing is an important study in computer science. It helps us create algorithms and systems that can recognize human's emotion and responds to it appropriately. Affective computing relies heavily on psychologists' understanding of how emotions can be categorized and organized. There are currently two approaches to the organization of emotions: discrete emotion categories and dimensional emotion model.

The first approach organizes emotions into a small number of basic categories. For example, Tomkins (1962) identified 8 basic emotions whereas Izard (1993) identified 12 basic emotions. A popular model proposed by Ekman (1992) has 6 emotion categories, namely are anger, disgust, fear, happiness, sadness, and surprise. Each category acts as a discrete category rather than an individual emotional state. This approach has the shortcoming of considering emotions such as happiness and sadness as discrete categories, even though they feel like opposite emotion.

The second approach regards an emotional state as a point in a 2-D or 3-D space [...]. The two most important dimensions are valence, which relate to pleasure and displeasure, and arousal, which relates to how aroused or energetic is the emotion. The third dimension is dominance, which represents the dominant nature of the emotion. In this model, happiness and sadness are placed at opposite locations, and there is continuous variation of emotion from happiness to neutral to sadness.