**Chapter 2: Research Design**

Primary Data

Problem Identification and Clarification

Research Objectives

* Problem Identification: Transformer models have shown great promise in generating polyphonic music, but it is unclear how well they can capture long-term dependencies in the music.

Problem Clarification: The ability to capture long-term dependencies is important in generating music that has a coherent structure and is musically pleasing.

Problem Formulation: How effective are self-attention mechanisms in transformer models for capturing long-term dependencies in polyphonic music?

Objective: To evaluate the effectiveness of self-attention mechanisms in transformer models for capturing long-term dependencies in polyphonic music.

* This objective aims to investigate the suitability of transformer models for music generation by evaluating their ability to capture long-term dependencies in polyphonic music. The objective will involve examining the effectiveness of self-attention mechanisms in identifying and encoding relationships between musical elements over longer time periods.
* Problem Identification: The impact of training data on the performance of attention-based transformer models for polyphonic music generation is not well understood.

Problem Clarification: It is unclear how the size and diversity of training data affect the quality of generated music by attention-based transformer models.

Problem Formulation: The objective is to evaluate the impact of training data on the performance of attention-based transformer models for polyphonic music generation, and how the size and diversity of training data affects the quality of generated music.

Objective: To determine the relationship between training data size and diversity, and the quality of generated music by attention-based transformer models for polyphonic music generation.

* The objective of this study is to investigate how the quality of generated music by attention-based transformer models for polyphonic music generation is affected by the size and diversity of the training data used to train these models. In other words, the study aims to determine whether the quantity and variety of the training data have an impact on the quality of the generated music. By evaluating this relationship, the study can provide insights into how to optimize the training data selection process to improve the performance of attention-based transformer models for polyphonic music generation.
* Problem Identification: Computer-generated music often suffers from repetitive patterns, which can make the music uninteresting and predictable.

Problem Clarification: Generating diverse and original music is important in creating music that is musically pleasing and engaging.

Problem Formulation: How well can attention-based transformer models generate diverse and original polyphonic music, and how effective are they at avoiding repetitive patterns and generating novel musical ideas?

Objective: To assess the ability of attention-based transformer models to generate diverse and original polyphonic music by examining their ability to avoid repetitive patterns and generate novel musical ideas.

* The objective of this research is to evaluate the diversity and originality of polyphonic music generated by attention-based transformer models. Specifically, the research aims to examine the model's ability to avoid repetitive patterns and generate novel musical ideas. By assessing the model's ability to generate diverse and original music, this research can contribute to the development of more advanced and creative machine learning models for music generation.

Validity Type

Ethical Considerations