

Project Proposal: Laufeyify

Team: Bao Dang, Minh Vu

Group Members:

Bao Dang and Minh Vu are the core team members for the project "Laufeyify". Bao Dang will focus on the development of the audio processing algorithms, specifically the integration and customization of diffusion models to match Laufey's musical style. He will handle the technical setup, including configuring the audio diffusion environment and scripting the necessary code for audio transformation. Minh Vu will take on the roles of data collection, model training, and evaluation. He will curate datasets, oversee the training of the diffusion models, and develop the metrics for assessing audio quality and style fidelity.

Motivation:

The motivation behind "Laufeyify" is to explore the intersection of AI and music, specifically how diffusion models can be adapted to replicate a specific artist's style across various songs. This project is intriguing because it combines technical AI challenges with creative musical expression, pushing the boundaries of how AI can contribute to creative industries.

Literature Review:

The team will review literature on audio diffusion techniques, including works on latent audio diffusion models and efficient music generation from text, as these provide a foundational understanding of the technical challenges and current capabilities in audio style transformation ([Stability AI](#)) ([ar5iv](#)).

Data:

The data for "Laufeyify" will consist of audio samples of Laufey's songs and other diverse musical pieces for style transformation. This will involve collaboration with music databases and possibly custom recording sessions to gather a comprehensive dataset that spans various musical styles.

Approach:

The approach will involve using state-of-the-art audio diffusion techniques. Specifically, the project will adapt models like "Stable Audio" and "Moûsai", which utilize latent diffusion models for audio to ensure fast processing and high-fidelity output ([Stability AI](#)) ([ar5iv](#)). Modifications will be made to these models to incorporate characteristics specific to Laufey's music style.

Evaluation Metric:

The project will use both qualitative and quantitative metrics to evaluate the transformed audio. Qualitatively, listening tests will be conducted to assess the similarity to Laufey's style. Quantitatively, similarity metrics and style accuracy will be calculated using audio analysis tools.

References:

Stability AI. (2023). "Stable Audio: Fast Timing-Conditioned Latent Audio Diffusion."
<https://stability.ai/research/stable-audio-efficient-timing-latent-diffusion>

arXiv. (2023). "Moûsai: Efficient Text-to-Music Diffusion Models."
<https://ar5iv.org/pdf/2301.11757>