



DAMSS

DATA ANALYSIS
METHODS FOR SOFTWARE
SYSTEMS



15th Conference on

DATA ANALYSIS METHODS for Software Systems

November 28–30, 2024

Druskininkai, Lithuania, Hotel “Europa Royale”

<https://www.mii.lt/DAMSS>

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<https://doi.org/10.15388/DAMSS.15.2024>

ISBN 978-609-07-1112-5 (digital PDF)

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An Overview of the Machine Learning Algorithms Used for Music Source Separation

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Music source separation refers to the process of isolating individual audio sources from a mixed audio signal, allowing for enhanced manipulation and analysis of musical elements. With the growing availability of music in digital formats, the number of research articles on music source separation has increased significantly. Although there are countless different music source separation models available, most of them utilize modified versions of machine learning algorithms, including 1) Convolutional Neural Networks, 2) Recurrent Neural Networks, and 3) Attention-Based Transformers. This work presents and discusses the results of a survey on music source separation approaches. The primary purpose of this analysis is to understand the underlying logic of each algorithm and how they differ from each other. Additionally, it is crucial to compare the performance of the models that adapt machine learning algorithms using a quantitative metric – SDR (signal to distortion ratio) in order to determine which machine learning algorithm is the most efficient for separating stems in a musical recording. Our literature analysis not only answers the question of which models are most commonly used in the existing literature but also provides answers to which datasets are employed for model training and which acoustic features are utilized to represent the acoustic signals of musical instruments. The results of this analysis contribute to a deeper understanding of current research approaches and provide a foundation for future research in this area.

Acknowledgment: The conference participation is funded by EPAM.