# Quantifying Musicians' Influence based on Complex Network Models



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# Quantifying Musicians' Influence based on Complex Network Models



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# 摘要

大学生的自主学习一直都是我国教育研究的重要课题和高等教育改革的重要着力点。

**关键词：**新冠肺炎疫情；大学生；大学英语；网络自主学习

# Abstract

Autonomous learning has always been an important topic of educational research and a focus of higher education reform in China.

**Key words****:** Novel coronavirus epidemic; College students; College; English; Web-based autonomous learning

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**Chapter 1 Introduction**

1.1 Background of the study

There are a lot of various rankings in life, and behind the rankings is the integration of information and data support in many aspects; processing, integrating and comparing the data according to the given index, which can let us quickly understand the most of the objects of the index and quickly extract the information we need. Music is a complex and subjective product, and there can be many kinds of music evaluation indicators, for example, the rankings of several major music software such as QQ Music, NetEase Cloud Music, and Kugou Music, which mostly focus on the release time and play volume of songs, and this kind of data is often more intuitive and easy to obtain; however, the rankings such as "most influential singers" on the Internet, which involve the most influential singers, can be easily understood. However, for charts such as "most influential artists" on the Internet, the data involved are complex and diverse, and different people have different opinions, so it becomes a major difficulty to select indicators based on such data processing. Given a dataset, how to select the indicators and build a model to process the data to get a more convincing ranking?

1.2 Research questions

(1) How to synthesize the data and select a more convincing ranking metric based on the given musician dataset?

(2) How to build a model to process the above data according to the selected metric and quantify the influence of musicians?

1.3 Purpose and methods of the study

In order to understand how to handle complex multidimensional and multiobject data such as music characteristics, construct indicators and models, and obtain a comprehensive and convincing ranking, this paper chooses the influence of musicians as the research context and conducts an experimental study.

The study is based on the following two methods to develop the experiment.

(1) Literature analysis method: learn to select the appropriate ranking index by finding relevant literature

(2) Data analysis and processing experiments: Based on the data of musicians and their fans collected on AllMusic.com and the data of music characteristics of individual musicians provided by Spotify's API, we construct a complex music network, calculate the music influence of a musician based on the strength of his influence on his fans' music and his importance in the music network, and build a music chart based on our own established The musician's music influence is calculated based on the musician's influence on his fans and his importance in the music network, and a music chart is constructed based on the model he built.

1.4 Significance of the study

For individual, through the dissertation training of this course, they can solidify their theoretical and practical foundation, understand the data processing behind the ranking from an objective perspective, and learn to handle complex multidimensional data.

For society, to propose a model for ranking the influence of musicians based on the data of given musical features for other readers to learn from.