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作品名稱 **Migration Data-Driven Mathematical Model for New City Growth**

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國　　家 **South Korea**

就讀學校 **Sejong Academy of Science and ART**

作者姓名 **AHN, MIN**

HAN, HYESUN

作者照片

Abstract

The growth of a city and the population movement has many correlations. However, the complex interaction causes difficulties in developing a mathematical model needed for analyzing the growth factor of a city and the movement factor of population. The model involving traditional equations cannot explain many phenomenon.

The newly introduced data-science suggests possibilities to overcome these difficulties. Particularly, the abundant amount of accumulated data proposes a new solution for the problem we have. Throughout these steps, data-utilizing methodology, such as machine learning for artificial intelligence, are researched and developed with attention.

In this research, data about accumulated for previous population movement and city growth are collected, and a mathematical science model based on data is developed to explain population movement and city growth by utilizing data analyzing methods such as machine learning. Especially, artificial neural network and stratified advance learning(deep learning) proves possibilities in solving many problems. This research aims to construct an artificial neural network appropriate for population movement and consequently use it in developing population movement model.

Using this model, growth of many existing cities can be explained and furthermore, examining the population movement factor of a city and social factor necessary for city growth become possible. This model is expected to become the tool for resolving overpopulation and predicting and deciding factors needed for a new future city. In spite of decreasing population, it is still important to develop a model for population movement that well explains city growth and environment change.

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This is an interesting research topic. It is suggested to include some background data with the aims to 'really' understand the mechanisms behind population growth in a city. Besides, comparing population growth in different types of city might also help us to explore this issue more deeply.