Team Control Number

88022

Problem Chosen

B

2018
MCM/ICM
Summary Sheet

How many languages

Abstract

This paper establishes the XXX model to predict the trends of global languages and provide the best recommendations about the location of international office for a multinational company.

Firstly, in order to predict how languages of the world may vary over time, we build a multiple regression model, using data we collected from **Twitter** and other sources. Using this model, we predict the trends of native speakers and total language speaks in the next 50 years and find that ... .

Secondly, based on the result our model produces, we use fuzzy algorithm to help us simulate the distribution of different languages and locate the best place for the company's global offices, taking the population and location of capital of every country into consideration. And we compare our recommendations with the global office choosen by world top 500 to verify our method and get great results.

Thirdly, we studied how would our model's results change with the type of our client company....

How many languages

Zhao Yi, Peng Xutan, Chen Dengbo

February 10, 2018

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This paper establishes the XXX model to predict the trends of global languages and provide the best recommendations about the location of international office for a multinational company.

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Keywords: Multiple regression model, Fuzzy algorithm

Contents

1   Introduction

1.1   Background

Half of the world's population speak one of ten languages as their native language, although there are nearly 7,000 languages spoken on the earth. But with the influence of government, culture, economy and the impact of globalization, popularity of languages may change over the time.

A COO of a multinational service company wants to know the trends of global languages and locations for this company's new international offices. So we designed a multiple regression model and applied a fuzzy algorithm to help this company make the choice.

1.2   Restatement of the Problem

We are required to build a model to predict the trends of global languages, including the number of speakers and the geographic distribution change of the top-10 languages. Then we need to decide where the new international offices of the company should be located, or take efforts to reduce the number of offices.

2   Basic Assumptions

2.1   Assumption 1.

We assume that the land area of every country doesn't change during the period of time we study.

2.2   Assumption 2.

We ignore unpredictable or low-probablity events that may cause great impact to languages trends.

3   Analysis of the Problem

We consider the distribution of languages as the output of a function related to multiple factors, such as GDP, area, education, immigrants,ethnic fractionalization, population, and foreign trade turnover of countries, number of native speakers of languages, and etc.

So we build the model like this, assume ...

4   Models and Methodology

5   The Model Results

6   Validating the Model

7   Conclusions

8   A Summary

9   Evaluate of the Mode

10   Strengths and weaknesses

10.1   Strengths

- **Applies widely**
  This system can be used for many types of airplanes, and it also solves the interference during the procedure of the boarding airplane,as described above we can get to the optimization boarding time.We also know that all the service is automate.

- **Improve the quality of the airport service**
  Balancing the cost of the cost and the benefit, it will bring in more convenient for airport and passengers.It also saves many human resources for the airline.

-

10.2   Weaknesses

- ...

- ...

References

[1] D. E. KNUTH The TEXbook the American Mathematical Society and Addison-Wesley Publishing Company , 1984-1986.

[2] Lamport, Leslie, LATEX: " A Document Preparation System ", Addison-Wesley Publishing Company, 1986.

Appendices

Appendix A First appendix

Here are simulation programmes we used in our model as follow.

Appendix B Second appendix