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Problem Chosen

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Summary Sheet

The L^AT_EX Template for MCM Version v6.2

Summary

This paper is about to propose a predictable model which is forecasting the number of each native speaker and total speak in the next 50 years. Also, the model would be used to commercial field, it could find a better place to open a office which can make huge benefit towards a service company. And at last, due to the changing nature of global communcation, in order to save the resources of the company, we calculate the profits that the company earn and losses. The results is to suggest the company whether open six office or not. We first model the trend of number of native speaker based grey prediction model, forecast

Secondly, we define some useful index

Thirdly, we test the model by using historical data, we give the criterion that percentage difference should be under 5% As well as we note that the model's strength and weaknesses, which can only refer limited years and the model's creditability would decrease as the time through.

Finally, the model

Keywords: Population; Native speaker ;

The L^AT_EX Template for MCM Version v6.2

February 10, 2018

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1 Introduction

1.1 Background

Nowadays, There are 7099 languages around the world. Languages are spread unequally throughout the world. That trend is clear whether were looking at whole regions, or individual countries. Under the influence of globalization, the distribution and number of each language speaker are now very different from the past. It is changing all the time. [2] Moreover, an increasing number of people who learn another languages as second language even third language or above.

So we established this model to predict the distribution of the languages in the next 50 years. A further data can improve the business by decreasing the probability of mistakes to open a office. The place would be considered and selected depend on economic index. It could be easy to refer which language would become popular in the corresponding place in the future. Besides, it would be offering the job opportunity directly to someone in need who satisfied the language requirement. Turning job finding to be more convenient. On the other hand, considering the people in these places who can speak more than one language, and they are the main targets to employ. The distribution of number of languages used can be review.

The total number of speaker is mainly affected by the population growth.

We focus exclusively on the second definition.

- the angular velocity of the bat,
- the velocity of the ball, and
- the position of impact along the bat.

center of percussion [Brody 1986], Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetur.

1.2 Assumptions

The model is going to ignore unpredictable and high-impact, we have to make following assumptions to guarantee the correctness of the model.

- ensure the information is absolutely right,
- the governments won't change the official language in their country,
- ignore the large-scale war, assume it won't break,
- the force over time that the hitter hands applies on the handle.

Theorem 1.1. $\int_{-\infty}^x x dF_l(x)$

Lemma 1.2. T_{EX} .

2 Analysis of the Problem

2.1 Overall analysis

2.2 Overall analysis

Proof. The proof of theorem. □

3 The models

3.1 Notations

We will use the symbols that given in the following table.

3.2 The model idea

Due to the lack of data for the number of native speaker, we consider the grey prediction model to simulate the growth of speakers in the next 50 years. As we have found

Variable	Description
L_i	Number of first(second,third or above) language (i=1 for first,etc)
Eg	Number of Emigration
Ig	Number Immigration
P	Population
P_{GDP}	Per Capita GDP
Im	Import (dollar)
Ex	Export (dollar)

the factor of native speaker's growth has a strong relation with population growth of the countries which take it as official language.

After the calculation of the grey prediction model, we obtain the global distribution of all total different languages speakers. Then we established economic model to choose the place to open a office. The model consider the business effect and the profits that the company may receive.

3.3 Growth of native speaker model

We build up this model based on grey prediction model

Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio. Sed vehicula hendrerit sem. Duis non odio. Morbi ut dui. Sed accumsan risus eget odio. In hac habitasse platea dictumst. Pellentesque non elit. Fusce sed justo eu urna porta tincidunt. Mauris felis odio, sollicitudin sed, volutpat a, ornare ac, erat. Morbi quis dolor. Donec pellentesque, erat ac sagittis semper, nunc dui lobortis purus, quis congue purus metus ultricies tellus. Proin et quam. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Praesent sapien turpis, fermentum vel, eleifend faucibus, vehicula eu, lacus.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Donec odio elit, dictum in, hendrerit sit amet, egestas sed, leo. Praesent feugiat sapien aliquet odio. Integer vitae justo. Aliquam vestibulum fringilla lorem. Sed neque lectus, consectetur at, consectetur sed, eleifend ac, lectus. Nulla facilisi. Pellentesque eget lectus. Proin eu metus. Sed porttitor. In hac habitasse platea dictumst. Suspendisse eu lectus. Ut mi mi, lacinia sit amet, placerat et, mollis vitae, dui. Sed ante tellus, tristique ut, iaculis eu, malesuada ac, dui. Mauris nibh leo, facilisis non, adipiscing quis, ultrices a, dui.

Party	1900		1906		1910	
	% of Vote	Seats Won	% of Vote	Seats Won	% of Vote	Seats Won
Provincial Assembly						
Conservative	35.6	47	26.0	37	30.9	52
Socialist	12.4	18	27.1	44	24.8	39
Christian Democrat	49.2	85	41.2	68	39.2	59
Other	2.8	0	5.7	1	5.1	0
Total	100.0	150	100.0	150	100.0	150
National Assembly						
Conservative	32.6	4	23.8	3	28.3	3
Socialist	13.5	1	27.3	3	24.1	2
Christian Democrat	52.0	7	42.8	6	46.4	8
Other	1.8	0	6.1	0	1.2	0
Total	100.0	12	100.0	12	100.0	13

Table 1: Elections in Götefrith province, 1900–1910. (Taken from [1], pg. 414.)

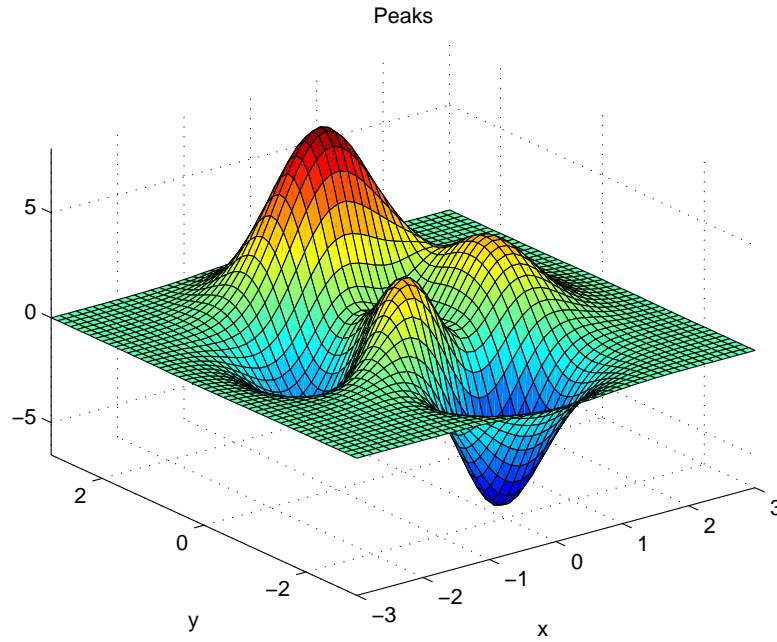


Figure 1: aa

(1)

$$a^2$$

(1)

$$\begin{pmatrix} *20ca_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix} = \frac{\textit{Opposite}}{\textit{Hypotenuse}} \cos^{-1} \theta \arcsin \theta$$

Morbi luctus, wisi viverra faucibus pretium, nibh est placerat odio, nec commodo wisi enim eget quam. Quisque libero justo, consectetur a, feugiat vitae, porttitor eu, libero. Suspendisse sed mauris vitae elit sollicitudin malesuada. Maecenas ultricies eros sit amet ante. Ut venenatis velit. Maecenas sed mi eget dui varius euismod. Phasellus aliquet volutpat odio. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Pellentesque sit amet pede ac sem eleifend consectetur. Nullam elementum, urna vel imperdiet sodales, elit ipsum pharetra ligula, ac pretium ante justo a nulla. Curabitur tristique arcu eu metus. Vestibulum lectus. Proin mauris. Proin eu nunc eu urna hendrerit faucibus. Aliquam auctor, pede consequat laoreet varius, eros tellus scelerisque quam, pellentesque hendrerit ipsum dolor sed augue. Nulla nec lacus.

$$p_j = \begin{cases} 0, & \text{if } j \text{ is odd} \\ r!(-1)^{j/2}, & \text{if } j \text{ is even} \end{cases}$$

Suspendisse vitae elit. Aliquam arcu neque, ornare in, ullamcorper quis, commodo eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero, molestie et, lobortis in, sodales eget, dui. Morbi ultrices rutrum lorem. Nam elementum ullamcorper leo. Morbi dui. Aliquam sagittis. Nunc placerat. Pellentesque tristique sodales est. Maecenas imperdiet lacinia velit. Cras non urna. Morbi eros pede, suscipit ac, varius vel,

egestas non, eros. Praesent malesuada, diam id pretium elementum, eros sem dictum tortor, vel consectetur odio sem sed wisi.

$$\arcsin \theta = \bigoplus_{\varphi} \lim_{x \rightarrow \infty} \frac{n!}{r!(n-r)!} \quad (1)$$

4 Calculating and Simplifying the Model

Sed feugiat. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Ut pellentesque augue sed urna. Vestibulum diam eros, fringilla et, consectetur eu, nonummy id, sapien. Nullam at lectus. In sagittis ultrices mauris. Curabitur malesuada erat sit amet massa. Fusce blandit. Aliquam erat volutpat. Aliquam euismod. Aenean vel lectus. Nunc imperdiet justo nec dolor.

5 The Model Results

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

6 Validating the Model

Morbi luctus, wisi viverra faucibus pretium, nibh est placerat odio, nec commodo wisi enim eget quam. Quisque libero justo, consectetur a, feugiat vitae, porttitor eu, libero. Suspendisse sed mauris vitae elit sollicitudin malesuada. Maecenas ultricies eros sit amet ante. Ut venenatis velit. Maecenas sed mi eget dui varius euismod. Phasellus aliquet volutpat odio. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Pellentesque sit amet pede ac sem eleifend consectetur. Nullam elementum, urna vel imperdiet sodales, elit ipsum pharetra ligula, ac pretium ante justo a nulla. Curabitur tristique arcu eu metus. Vestibulum lectus. Proin mauris. Proin eu nunc eu urna hendrerit faucibus. Aliquam auctor, pede consequat laoreet varius, eros tellus scelerisque quam, pellentesque hendrerit ipsum dolor sed augue. Nulla nec lacus.

7 Conclusions

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui,

et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

8 A Summary

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

9 Evaluate of the Mode

10 Strengths and weaknesses

Etiam euismod. Fusce facilisis lacinia dui. Suspendisse potenti. In mi erat, cursus id, nonummy sed, ullamcorper eget, sapien. Praesent pretium, magna in eleifend egestas, pede pede pretium lorem, quis consectetur tortor sapien facilisis magna. Mauris quis magna varius nulla scelerisque imperdiet. Aliquam non quam. Aliquam porttitor quam a lacus. Praesent vel arcu ut tortor cursus volutpat. In vitae pede quis diam bibendum placerat. Fusce elementum convallis neque. Sed dolor orci, scelerisque ac, dapibus nec, ultricies ut, mi. Duis nec dui quis leo sagittis commodo.

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.

-

[1]

10.2 Weaknesses

- **Policy never change**

The model works only depend on no any outside force disturb, for instance: Policy won't change, and wherever is stable.

- **Data insufficient**

11 Memo

MEMORANDUM

To: Chief Operating Officer
From: Team #84802
Subject: The best place to open office
Date: February 13, 2018

References

- [1] John Grossman, editor. *The Chicago Manual of Style*. University of Chicago Press, Chicago, IL, 14th edition, 1993.
- [2] Gary F. Simons and Charles D. Fennig (eds.). How many languages are there in the world? *Ethnologue*, 2017.

Appendices

Appendix A First appendix

Aliquam lectus. Vivamus leo. Quisque ornare tellus ullamcorper nulla. Mauris porttitor pharetra tortor. Sed fringilla justo sed mauris. Mauris tellus. Sed non leo. Nullam elementum, magna in cursus sodales, augue est scelerisque sapien, venenatis congue nulla arcu et pede. Ut suscipit enim vel sapien. Donec congue. Maecenas urna mi, suscipit in, placerat ut, vestibulum ut, massa. Fusce ultrices nulla et nisl.

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

Input matlab source:

```
function [t,seat,aisle]=OI6Sim(n,target,seated)
pab=rand(1,n);
for i=1:n
    if pab(i)<0.4
        aisleTime(i)=0;
    else
        aisleTime(i)=trirnd(3.2,7.1,38.7);
    end
end
end
```

Appendix B Second appendix

some more text **Input C++ source:**

```
#include <iostream>
#include <cstdlib>
#include <ctime>

using namespace std;

int table[9][9];

int main() {

    for(int i = 0; i < 9; i++){
        table[0][i] = i + 1;
    }

    srand((unsigned int)time(NULL));

    shuffle((int *)&table[0], 9);

    while(!put_line(1))
    {
        shuffle((int *)&table[0], 9);
    }

    for(int x = 0; x < 9; x++){
        for(int y = 0; y < 9; y++){
            cout << table[x][y] << " ";
        }

        cout << endl;
    }

    return 0;
}
```
