Team Control Number

33652

Problem Chosen

A

2015 Mathematical Contest in Modeling (MCM/ICM) Summary Sheet

This Is the Article Title

Executive Summary

There is the abstract of our paper. It should be brief enough.

1. "Is"   2. "Is"   3. 'Is'

Contents

1   Introduction

Since the dawn of Industrial Age shed on the human civilization, the life of people has been developed to a large extent in the past two centuries and enjoyed the convenience along with the technology. However, a global problem has emerged, which is bred by the excessive consumption of the resources and irreversible pollution of the environment. It has attracted considerable attention in a variety of organizations and governments and been discussed by the specialists since then. The contradiction of developing economics and protecting nature is a controversial issue, which seems unsolvable.

For meeting human development goals while maintaining the health of ecosystem, the trend of promoting the idea of sustainable development catches on. Sustainable development is an ideal state that living conditions and resource-use continue to meet human needs without undermining the integrity, stability and beauty of the nature. Striving to achieve the sustainable future, various countries has gathered to deliberate specific measures due to their own national conditions.

Comparing to relatively well-rounded developed countries, the implement of developing countries seems more difficult and complex, which may need more time and aids. Loaded with rapid increasing of population, dragged by poor technology and immature management, they need supports and investments from the international organizations. Therefore, it is supposed to set up a scientific and reasonable assessment to estimate the situation of the country and make a practical scheme to allocate their limited resources.

Our work is to build a model to estimate the developing country's need degree of support and intervention according to the analysis of related indicators, then to distinguish the more sustainable from the less ones, besides, to predict the change that will occur over the 20 years in the future. In the following parts, we will show the detailed evaluation method and results of 48 Least Developed Countries (LDC), in the end give the prediction of the selected one as an example.

2   Assumption

(1) Build the co-author network of the Erdos1 authors and analysis of the characteristics of the network.

(2)

3   Symbol Description

In the section, we use some symbols for constructing the model as follows.

Symbol	Description
σ	The standard deviation
110010101010	binary
F	This is the best beautiful symbol.

P.s:Other symbol instructions will be given in the text.

4　The Influence of Researchers

4.1　Model one:Model abstract

4.1.1　Insert a picture for example

In this section,we will test to insert a picture.

Look at Figure 1

Figure 1: This is a cat.

Figure 2: This is a cat.

Figure 3: This is the back of a human.

4.2　Model two:

4.2.1　Test insert math formulas

In the section, we will insert math formulas.
$\ln (x + 1) + \max \{\varepsilon, \theta\}$

$$\exists\, \delta > 0, \quad when \quad |x - x_0| < \delta, \quad s.t.\ |f(x) - f(x_0)| < \varepsilon \tag{1}$$

$$\ln (x + 1) + \max \{\varepsilon, \theta\}$$
$$\ln (x + 1) + \max \{\varepsilon, \theta\}$$

4.2.2 Test Equations

$$f(x) = \cos x \tag{2}$$
$$f'(x) = -\sin x \tag{3}$$
$$\int_0^x f(y)dy = \sin x \tag{4}$$

4.2.3 Others

$$A = (B + C) + D$$
$$= B + (C + D)$$

OK, let's look at another one.

$$\begin{cases} \dot{x}(t) = A_{ci}x(t) + B_{1ci}w(t) + B_{2ci}u(t) \\ z(t) = C_{ci}x(t) + D_{ci}u(t) \end{cases} \tag{5}$$

$$A = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix}.$$

4.3 Result Analysis:

Table 1: Rank of Researcher (Top 10)

Rank	Researcher Name
1	ALON, NOGA M.
2	HARARY, FRANK*
3	GRAHAM, RONALD LEWIS
4	BOLLOBAS, BELA
5	RODL, VOJTECH
6	SOS, VERA TURAN
7	TUZA, ZSOLT
8	FUREDI, ZOLTAN
9	SPENCER, JOEL HAROLD
10	POMERANCE, CARL BERNARD

Table 2: Rank of Researchers' Total Influence (Top 10)

Rank	Researcher Name
1	ALON, NOGA M.
2	GRAHAM, RONALD LEWIS
3	RODL, VOJTECH
4	BOLLOBAS, BELA
5	HARARY, FRANK*
6	FUREDI, ZOLTAN
7	TUZA, ZSOLT
8	SOS, VERA TURAN
9	SPENCER, JOEL HAROLD
10	GYARFAS, ANDRAS

Table 3: Test

No. \ Title	L-Title	R-Title
1	One	First
2	Two	Second
3	Three	Third

5 The Influence of Papers

6 Model Extension

7 Error/Sensitivity Analysis

8 Analysis of The Model

References

[1] Last name, Initials. (year). Title.*The journal name*. Volume(Issue), pages.

[2] Last name, Initials. (year). *Book name*. Address: Publisher.

[3] Last name, Initials. (year). Collection name, *Article name*(pp.pages). Address: Publisher.

[4] Author. Article Title[D]. Address: Saver, year: page numbers.

[5] The site name, Title. The Site Link. Time.

[6] The main responsibility author. Electronic document titles. Electronic literature source[Symbol]. Site Link, Publish or update date / date references.

Appendices

Appendix A   First appendix

some text...

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

Input matlab source:

```matlab
function [t,seat,aisle]=OI6Sim(n,target,seated)
%
%This is a example of Matlab source code for the model.
%Enjoy yourself.
%
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
```

Appendix B   Second appendix

some more text

Input C++ source:

```cpp
//===========================================================================
// Name        : Sudoku.cpp
// Author      : wzlf11
// Version     : a.0
// Copyright   : Your copyright notice
// Description : Sudoku in C++.
//===========================================================================

#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;
}
```