Solution to Attribute-Based Assignment Problems

A Primer to the University Timetabling Problem

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Outline

Abstract

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Motivation

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A Reduction Problem

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The Notion of Order

To apply this algorithm, we first need to define the notion of order about the characteristics of interest. For example,

- If the basis for assignment is distance between the partitions, we need to serialize all the states according to their relative distances, as in the sample problem
- If body size, we need to assign model BMI values to each category

NB

A mix characteristics can be considered for any assignment, so long as each partition can be represented with an ideal value, which will be compared with the characteristic value of each candidate

The Constraint Functions

We define constraint function(s) based on the variables or characteristics of interest

Illustration

$$\mu_j(u_i) = \frac{1}{1 + (j - s(u_i))^2} \tag{1}$$

$$\mu_j(u_i) = \frac{(j - s(u_i))^2}{1 + (j - s(u_i))^2} \tag{2}$$

Adjusting for Capacities

Whenever capacity is defined for each partition, we:

- Establish the feasibility of an optimum assignment schedule.
- Determine the proportionate number of objects due to each partition

Illustration

Let

$$J(p_i) = j_i \tag{3}$$

be the maximum capacity each partition p_i can contain.

$$V = \sum_{i=1}^{k} J(p_i) = \sum_{i=1}^{k} j_i \tag{4}$$

$$\mid U \mid \leq V \tag{5}$$

Assigning objects to partitions

The following steps conclude the assignment procedure

- If multiple constraints are defined, we combine each membership by mutiplying out
- We assign each candidate to the best-matched partition group

The Constraint Functions

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List

- Point A
- Point B
  - part 1
  - part 2
- Point C
- Point D

Using Columns

¡text¿

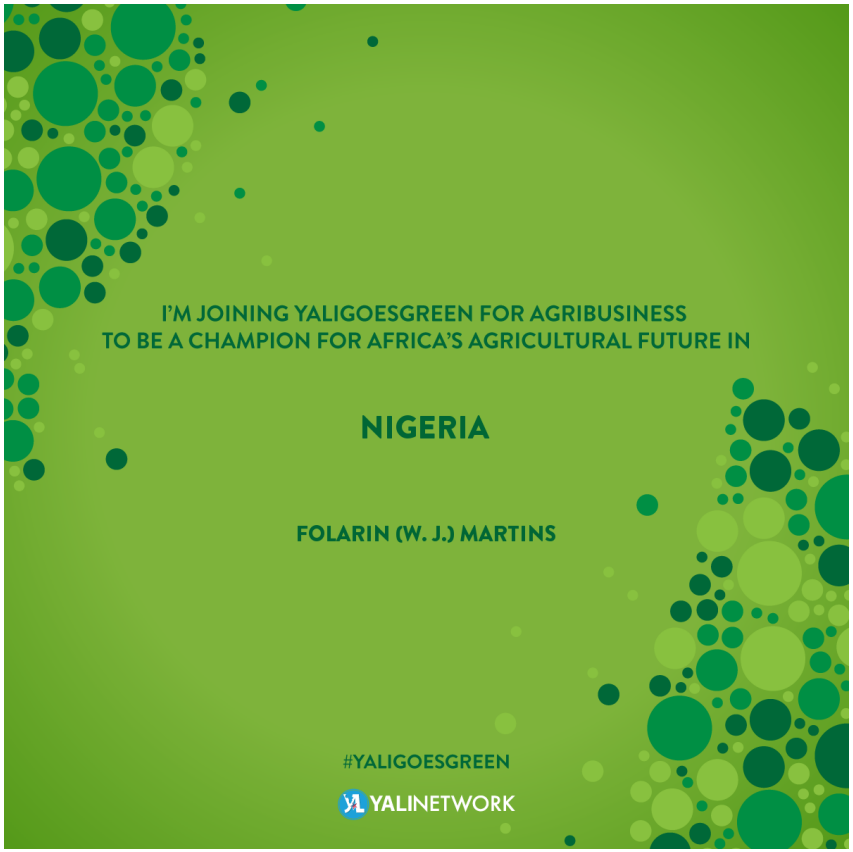

Figure: My figure. An example of a cool figure

Listing

API	Application Programming Interface
LAN	Local Area Network
ASCII	American Standard Code for Information Interchange

Block Title

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Definition

A prime number is a number that...

Example

A prime number is a number that...

Theorem (Pythagoras)

$a^2 + b^2 = c^2$

Corollary

$x + y = y + x$

Proof.

$\omega + \phi = \epsilon$ □

go to terms page

More Lists

1. Point A

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More Lists

1. Point A
2. Point B

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More Lists

1. Point B
   - part 1

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More Lists

1. Point A
2. Point B
    - part 1
    - part 2

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More Lists

1. Point A
2. Point B
   - part 1
   - part 2
3. Point C

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More Lists

II. Point B
    - part 1
    - part 2
III. Point C
IV. Point D

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More Lists

I. Point A
II. Point B
    - part 1
    - part 2
III. Point C
IV. Point D
V. Point D

Example Text Example Text Example Text Example Text Example Text Example Text Example Text Example Text Example Text