Automating Clerkship Matching Using Beans Assignment and Linear Sum Optimization

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ABSTRACT

Concise statement of the problem, approach, and conclusions of the work should be described. It should clearly state the paper's contribution to the field. Your abstract should be no more than 150 words, without references. The abstract is followed by a list of up to six keywords. The first keyword must be chosen among the areas (table 2), and the second among the fields. Try to adhere to these lists, but in case your domain is not listed in the fields, you may create a new one.

Keywords

Guides; instructions; conference publications.

INTRODUCTION

Third-year medical students complete a series of core rotations covering internal medicine, surgery, paediatrics, obstetrics, gynaecology, neurology, psychiatry, and family medicine. Elective rotations often require a prerequisite core rotation; for example, to enroll in the orthopaedics elective, students must first complete the core surgery elective. Thus, the order in which students are assigned to complete these rotations can

# Automating Clerkship Matching Using "Bean Assignment" and Linear Sum Optimization

## Introduction

description of problem

## Methods

1. reframing question as a maximum cost problem

2. sourcing optimal costs and "beans" method

3. matrix setup + linear sum optmization (scipy)

4. custom error metrics

## Results

source from Alan and Tori

## Discussion

1. summary/key findings

2. discussion of optimality and completeness

3. future endeavors including skew cost with cost modifying functions

4. discussion of game theory and optimal student strategy

## References

USING the template

Creating a Manuscript with the Template or Format Files

For creating a new manuscript:

* You can use any of the format files or the template file as a basis for entering your text
* Verify that the page format is A4 and the type area is correct (see below).
* Use the NDM styles defined in the template as much as possible to format your text (Table 1).

Reformatting an Existing Word Document with the Template File

If you need to apply the template (.dotx) to an existing manuscript, do the following:

* Open your manuscript in MS Word.
* Adjust the page format and the type area (see below).
* Choose the menu item *Tools/Templates and Adds-ins*, and attach the template to the document. Ensure that « Automatically Update Document Styles » is set, and validate.
* Choose *Edit/Select All* and apply the NDM Normal style to the whole document.
* Save the document
* Apply the adequate styles to your text for reformatting it.

**Table 1.** The predefined styles in *NDMConfTemplate.dot*

|  |  |  |
| --- | --- | --- |
| **Style name** | **For** | **Definition** |
| NDM Abstract | Abstract | Time New Roman 10pt. Space: before 2pt. Indent: left 1 cm, right 1 cm |
| NDM Abstract title | Abstract title | Time New Roman 10pt, bold, capitals. Space: before 18pt. Indent: left 1 cm |
| NDM Affiliation | Affiliations | Time New Roman 11pt, centred, italic |
| NDM Author | Authors | Time New Roman 12pt, centred |
| NDM Bullet | Unnumbered lists, with bullet | Time New Roman 10pt, justified. Indent: left 0.5 cm, hanging 0.5 cm. Space: before 4pt, after 4 pt., no space between lines of same style |
| NDM Caption | Captions and legends of illustrations of no more than one line | Time New Roman 9pt, centred. Space: before 4pt, after 4pt. Indent: left 1 cm, right 1 cm |
| NDM CaptionLong | Captions and legends of illustrations of more than one line | Time New Roman 9pt, justified. Space: before 4pt, after 4pt. Indent: left 1 cm, right 1 cm |
| NDM Equation | Equations | Time New Roman 10pt. Space: before 6pt, after 6pt. Indent: left 1 cm, right 1 cm |
| NDM Footnote | Footnotes | Time New Roman 8pt, justified. |
| NDM Header | Document Header | Time New Roman 9 pts, centred |
| NDM Heading 1 | First level headings | Time New Roman 11pt, bold, capitals. Alignment: left. Space: before 12pt, after 3pt |
| NDM Heading 2 | Second level headings | Time New Roman 11pt, bold. Alignment: left. Space: before 8pt, after 3pt |
| NDM Heading 3 | Third level headings | Time New Roman 11pt, italic. Alignment: left. Space: before 6pt, after 1pt |
| NDM Keyword title | Keywords title | Time New Roman 10pt, bold, capitals. Space: before 12pt. Indent: left 1 cm |
| NDM Keywords | Keywords | Time New Roman 10pt, italic. Space: before 2pt. Indent: left 1 cm, right 1 cm |
| NDM Normal | Running text | Time New Roman 10pt, justified. |
| NDM Table | Table text | Time New Roman 8pt, justified. |
| NDM Title | Manuscript title | Time New Roman 18pt, bold, centred. Space: before 16pt, after 12pt |

STYLE AND LAYOUT

Page Size

Please adhere to A4 paper size only. All final publications will be formatted and displayed in A4 size. The following margin settings must be used: top and bottom 2 cm; left and right 2.5 cm; header and footer 1.25 cm. Right margins should be justified.

Title and Authors

Your paper’s title should be in Time New Roman 18-point bold and centred. Authors’ names should be in Times New Roman 12-point and centred, and affiliations in Times New Roman 11-point italic and centred. Use capitals for the author’s surname. Use superscripted alphabetic characters for connecting authors with their affiliations. In case of multiple affiliations, commas separate the characters.

Abstract and Keywords

Every submission should begin with a structured abstract of no more than 150 words. The abstract should be a concise statement of the problem, approach, and conclusions of the work described. It should clearly state the paper's contribution to the field. If possible, use an IMRAD structure.

The abstract is followed by a list of up to 6 keywords separated by semi-columns. The first keyword must be chosen among the areas (Table 2), and the second among the fields. Try to adhere to these lists, but in case your domain is not listed in the fields, you may create a new one.

Normal or Body Text

Please use a 10-point Times New Roman font or, if it is unavailable, another proportional font with serifs, as close as possible in appearance to Times New Roman 10-point. Please use sans serif or non-proportional fonts only for special purposes, such as headings or source code text.

Headers and footer

Please submit your final version with the pre-defined header and footer. The header of the first page is different and must be « International Conference on Naturalistic Decision Making 2013, Marseille, France ». The other headers are made of the name of the first author and the initial followed by *et al.*, then a minus sign and a short title of no more than 40 characters. The header must be no more than one line.

Leave the footer untouched.

Section Headings

The heading styles are described in Table 1. Sections should not be numbered. The level 1 header is capitals. For the other levels use initial capitals, except for articles, coordinate conjunctions and prepositions, unless they appear at the beginning of the heading. Headings should not have a full stop at the end. Do not use more than 3 levels.

**Table 2.** The keyword axes

|  |  |  |  |
| --- | --- | --- | --- |
| **Main categories** | **Topics** | **Areas** | **Fields** |
| Practical Application  Research/Experimentation  Theory and Modeling | Macrocognition  Cognitive Field Research and Cognitive Task Analysis  Cognitive Systems Engineering  Micro-macro Complementarities  Judgment and Decision Making  Team and Organizational Factors in Complex Cognitive Work  Human-Centered and Work-Centered Design | Common Ground  Coordination  Decision Making  Expertise  Externalized/Embedded Cognition  Learning and Training  Mental Models  Mental Simulation and Story-boarding  Planning and Prediction  Problem Solving/Trouble-shooting  Rigor/Resilience  Sensemaking  Command and control  Situation Awareness/Situation Assessment  Uncertainty Management | Archaeology  Architecture  Arts, fine and performing  Astronomy  Business  Business intelligence  Chemistry  Earth and atmospheric sciences  Education and training  Electronics  Engineering  Financial  General and miscellaneous  Government and law  Health  Language and literature  Manufacturing  Marketing  Mathematics and statistics  Medias  Military  Music  Physics  Security  Transportation |

Footnotes and endnotes

Keep footnotes to a minimum[[1]](#footnote-1). If they must take more than 10% of the type area, list them as endnotes, in an *Endnotes* section before the *References*. They must be numbered in Arabic numerals. Use the *NDM Footnote* style.

References

Please use American Psychological Association (APA) style. In the text, cite by authors’ last names followed by the year of publication – list all authors’ last names for the first time, then use “et al.” for subsequent citations if there are more than two authors. If multiple articles are cited at the same time, order them alphabetically by the first author’s last name and separate the citations by semicolons. If the same author(s) has/have more than one articles being cited, use chronological order and separate the year of publication of the articles by commas. For example: (Agarwal & Karahanna, 2000; Ajzen, 1988, 1991; Zhang, Benbasat, Carey, Davis, Galletta & Strong, 2002). Later in the paper, you may cite some of them again, along with others, as follows: (Agarwal & Karahanna, 2000; Ghani, Supnick & Rooney, 1991; Shneiderman, 1998; Tractinsky, 1997; Zhang et al., 2002). Use and when citations are part of the text; use & when citations are within parentheses or in the References section. See examples on the references corresponding to these citations at the end of this document. Your references should comprise only published materials accessible to the public. Proprietary information may not be cited.

ILLUSTRATIONS

General remarks

Place figures and tables close to the relevant text (or where they are referenced in the text). The text should include references to all illustrations. They should be centred on the page, except for small figures than can fit side by side inside the type area. Illustrations should not have text wrapped alongside.

Captions should be Times New Roman 9-point bold. They should be numbered (e.g., “Table 1” or “Figure 2”), centred and placed beneath the figure or table. Please note that the words “Figure” and “Table” should be spelled out (e.g., “Figure” rather than “Fig.”) wherever they occur. Do not use the words *below* or *above* while referring to the illustrations.

Place figure captions below the figure and table captions above the table. Use bold for table/figure labels and numbers only. Use the *NDM Caption* style when the caption is one line long, and *NDM CaptionLong* in the other case.

The proceedings will be made available online, thus color figures are possible. However, you are advised to refrain from using colours to deliver important information in your figures – not everyone has access to colour printers.

Inserting Images

Occasionally MS Word generates larger-than-necessary PDF files when images inserted into the document are manipulated in MS Word. To minimize this problem, use an image-editing tool to resize the image at the appropriate printing resolution (usually 300 dpi), and then insert the image into Word using *Insert/Picture/From File...*

Do not use GIF format. The preferred image formats are PDF (or EPS) and TIFF.

If you want to copy a figure from another application (such as PowerPoint) and then paste to the place where you want your figure to be, make sure that (1) the figure stays in the position, and (2) it does not take up too much space. You can ensure the former by double clicking the figure, then go to “Layout” tab, and select “In line with text.” To ensure the latter, use “Paste Special,” then select “Picture.” You can resize the figure to your desired size once it is pasted.

Table Style

Inserting a table in the text can work well. See Table 1 below. The text of tables must be formatted using the *NDM Table* style. You may want to adjust the vertical spacing of the text in the tables: in Word, use *Format/Paragraph…* and then the Line and Page Breaks tab. Generally, text in each field of a table will look better if it has equal amounts of spacing above and below it)

LANGUAGE, STYLE AND CONTENT

With regard to spelling and punctuation, you may use any dialect of English (e.g., British, Canadian, US, etc.) provided this is done consistently. Hyphenation is optional. To ensure suitability for an international audience, please pay attention to the following:

* Write in a straightforward style.
* Try to avoid long or complex sentence structures.
* Briefly define or explain all technical terms that may be unfamiliar to readers.
* Explain all acronyms the first time they are used in your text – e.g., “Digital Library (DL)”.
* Explain local references (e.g., not everyone knows all city names in a particular country).
* Be careful with the use of gender-specific pronouns (he, she) and other gendered words (chairman, manpower, *man-months*). Use inclusive language that is gender-neutral (e.g., *she* *or* *he*, *they*, *s/he*, *chair*, *staff*, *staff-hours*, *person-years*).

Conclusion

It is important that you write for the general audience. It is also important that your work is presented in a professional fashion, which is what this guideline is intended to help you with. By adhering to the guideline, you also help the conference organizers tremendously in reducing our workload and ensuring impressive presentation of your conference paper. We thank you very much for your cooperation and look forward to receiving your nice looking, camera-ready version!

ACKNOWLEDGMENTS

We thank all authors, committee members, and volunteers for their hard work and contributions to the conference. The references cited in this paper are included for illustrative purposes only.

REFERENCES

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1. This for clarity reason. [↑](#footnote-ref-1)