Proyecto 2 Flujo en Redes

Nicolás Hernández1, Nicolás Vásquez2

1 Universidad de los Andes  
C/Tulipan s/n, 28922, Madrid, Spain  
abraham.duarte@urjc.es

2 Universidad de los Andes

Av. Carl Friedrich Gauss, 08860 Castelldefels, Spain  
n.vasquez10@uniandes.edu.co

Abstract

Este documento contiene el desarrollo, explicación, implementación y los resultados del modelo matemático formulado para encontrar el patrón de corte que brinde el menor tiempo posible y cuya implementación obtenga un tiempo computacional bajo. Se realizó una implementación de la formulación de un problema CPP (Chinese Postman Problem) modificado para adecuarlo al problema de cortes utilizando el optimizador Gurobi con el API de Java.

# Introduction

Este documento contiene el desarrollo, explicación, implementación y los resultados del modelo matemático formulado para encontrar el patrón de corte que brinde el menor tiempo posible y cuya implementación obtenga un tiempo computacional bajo. Se realizó una implementación de la formulación de un problema CPP (Chinese Postman Problem) modificado para adecuarlo al problema de cortes utilizando el optimizador Gurobi con el API de Java.

The MIC/MAEB 2017 proceedings will be composed of the electronic manuscripts submitted by the authors and accepted by the Program Committee after the reviewing process. The file format must be PDF (*Portable Document Format*) on an A4 format paper (21cm × 29.7cm).

## Realización del grafo

Para realizar el grafo, se crearon dos nodos cuyo propósito era únicamente definir un nodo inicio y un nodo final, puesto que

## Formulación del problema

## Implementación en Java + Gurobi

## Resultados para las instancias proporcionadas

## Resultados en tiempo computacional

## Análisis de resultados

## Conclusiones

## Length of Papers

According to the submission format a different number of pages is allocated to papers:

S1) Original research contributions for publication in the conference proceedings of a maximum of 10 pages

S2) Extended abstracts of work-in-progress and position papers on an important research aspect of a maximum of 3 pages

S3) High-quality manuscripts that have recently, within the last year, been submitted or accepted for journal publication

## Word Processing Software

The Organizing Committee has made available a set of LaTeX macros and a Microsoft Word template for use in formatting your paper. If you use other word processing software, please make sure that your paper follows the format instructions provided below and that your final paper looks as closer as possible to this example.

# Style and format

## Layout

The exact dimensions for pages are:

* page width: 21cm;
* page height: 29.7cm;
* left and right margins: 2.5cm;
* top margin 1.25cm (up to the page header);
* bottom margin: 1.25cm (from the page footer).

## Fonts

For the purpose of uniformity among word processors, and since PDF is the submission file format, the official font to be used in the text is Adobe **Times**. Therefore, we strongly advise Microsoft Word users to avoid using Microsoft *Times New Roman,* which is not embedded into the PDF by default.

For the same reasons, as for the monospaced font, we ask to employ Adobe Courier instead of the Microsoft Courier New font. Moreover, the sans serif font to be used is Adobe Helvetica, instead of Microsoft Arial. Finally, for Greek and math symbols, please use the Adobe Symbol font.

All the aforementioned fonts are automatically set in the LaTeX mic-maeb2017.cls file, requiring the times.sty package (usually included in common LaTeX distributions).

## Headers

The header must be different for right- and left-opening pages, according to the format shown in this file. In the camera ready version, it must contain the paper id, which will be assigned to the paper after acceptance, followed by a dash and the page number (all typeset in 11pt regular font) on the external margin. The text “MIC/MAEB 2017” must be included in the header on the internal margin. The header must be followed by a 0.5pt black horizontal rule.

In the camera-ready version of the paper, the header is required to contain the paper ID, which will be assigned after acceptance. In the LaTeX class file the paper id can be set using the following command: \id{nnn}, whereas for Microsoft Word files it has to be explicitly changed in the file (please remember to do that both on odd and even page headers).

## Footer

The footer reads “Barcelona, July 4-7, 2017”, it must be typeset in 11pt regular font and put on the side of the internal margin for right- and left-opening pages.

## Title and author information

The title and the author information must be centered. The title should be typeset in a 18pt bold font, leaving a vertical space of 0.5cm after it.

Author names should be indicated as First name Initials Family name and typeset in a 11pt regular font. In case of multiple authors, each name must be separated by a comma. Each author must be followed by a numeric reference (or references, separated by a comma) of his/her institute typeset as a superscript. After the name of the authors a vertical space of 0.5cm must be left.

The institutions information must be typeset in a 10pt regular font. The information should include the numeric reference of the institute typeset as a superscript, the name of the institute (acronyms and abbreviations are possible), the postal address and the e-mail address of the authors belonging to that institute (separated by commas). A vertical space of 0.2cm must be left between two institutes. Please, avoid the automatic formatting of e-mail address as hyperlinks (as it is enabled by default in many word processing software).

## Abstract

The word **Abstract**, typeset in 10pt bold font, must be placed 0.5cm below the institutions information and an additional space of 0.2cm must be left after it.

The abstract content must be typeset in 10pt font, and indented by 1.0cm on both the right- and the left-hand sides. The first line of all paragraphs must be additionally indented on the left-hand side by 0.6cm.

## Headings

Headings can be used to organize the paper structure. The following heading types are allowed:

### Section Headings

Section headings must be numbered with consecutive Arabic numerals and typeset in 14pt bold font. The heading text must be indented on the left-hand side by 0.7cm. A vertical space of 0.5cm must be left before and after the heading.

### Subsection Headings

Subsection headings must be numbered with the section number and the subsection number (in Arabic numerals), separated by a period. The heading text must be typeset in 12pt bold font and indented on the left-hand side by 0.8cm. A vertical space of 0.4cm above and 0.2cm below the heading must be left.

### Subsubsection Headings

Subsubsection headings must be numbered with the subsection number followed by the subsubsection number (in Arabic numerals), separated by a period. The heading text must be typeset in 11pt bold font and indented on the left-hand side by 0.8cm. A vertical space of 0.4cm above and 0.2cm below the heading must be left.

## Text

The main body of the text must be typeset using a 11pt regular font. The first paragraph after a heading must be not indented, whereas other new paragraphs must be indented on the left-hand side by 0.6cm. The lines must be single-spaced.

## Item lists

Item lists must be typeset leaving 6pt above and below each item, whose text should be in 11pt single-spaced regular font. The bullet before each item has to be indented by 0.6cm and the item text has to be indented by 1.0cm, as in the following example:

* Item 1;
* Item 2, this is a really long item. Its purpose is to show that the text that spans many lines should be indented.

## Footnotes

Footnotes have to be placed at the bottom of the page and typeset in a 9pt font. The reference to footnotes must be done with superscript numbers.[[1]](#footnote-1) Footnotes must be separated from the text with a short line.[[2]](#footnote-2)

## Citations

Citations should be of the form [3], including the number for identifying the reference between squared parentheses. Multiple citations must be collected together between squared parentheses, separated by a comma and sorted in ascending order, as in the following example [1, 2, 4]. Consecutive multiple citations can be compressed by putting a dash between the first and the last reference number as in [1–4].

This behavior is achieved in LaTeX by using the command \bibliographystyle{plain}, and specifying the sort&compress option to the \usepackage{natbib} command if the authors want to use the natbib style.

## References

The title **References** must be typeset according to the section rules (except for the indentation) and followed by the list of references. Each reference must be identified by an Arabic numeral in squared parentheses. The list must be ordered alphabetically by the first author.

The reference text must be indented by 1.0cm with respect to the left margin (excluding the reference number between parentheses).

# Illustrations and Formulae

## Tables and Figures

Tables and Figures (in short illustrations) should be placed as close as possible to the place where they are first discussed. Illustrations must be numbered sequentially, depending on their type, and their caption should be placed below the illustration and it must read as Figure/Table #: caption text (see Figure 1 and Table 1 for concrete examples).

Illustrations should be horizontally centered in the page. The captions must be centered as well, and they must be typeset in 11pt regular font. Captions should be placed within a vertical space of 0.5cm above and below the text.

| Algorithm | Average cost |
| --- | --- |
| A | **1** |
| B | 2 |
| C | 5 |

Table 1: An example table

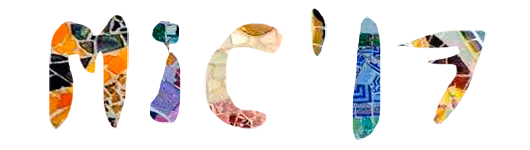


Figure 1: MIC logo

## 

Figure : MAEB logo

## Formulae

Mathematical formulae must be centered and numbered, using sequential Arabic numbers in parentheses as in the following example. The text in the formulae must be typeset in 11pt italic font.

 (1)

References

1. James Brown. Why the work of John Smith must not be cited. Personal communication, 2011.
2. James Brown and John Smith. How not to cite papers. In John Smith, editor, *Proceedings of the First International Conference on Modern Bibliometrics (MODBIB 2009*), pages 20–30, Pasadena (CA), USA, July 25–28 2009.
3. John Smith. How to make citations. *Journal of Modern Bibliometrics*, 1:1–10, 2010.
4. John Smith. Against the accusations of James Brown. Technical Report 01-11, CS Department, University of Serendipity, 2011.

1. This is a footnote example. [↑](#footnote-ref-1)
2. This is another footnote. [↑](#footnote-ref-2)