Automating Algorithm Design through Hyper Heuristic Genetic Programming

Elsa M. Browning
Division of Science and Mathematics
University of Minnesota, Morris
Morris, Minnesota, USA 56267
brow3924@morris.umn.edu

ABSTRACT

This paper provides a sample of a LaTeX document which conforms, somewhat loosely, to the formatting guidelines for the University of Minnesota, Morris, Computer Science Senior Seminar proceedings. It is based heavily on (and takes material directly from) a similar document illustrating the format of the ACM SIG Proceedings, which we have based our proceedings format on.

The original ACM document tried to include

> every imaginable sort of "bells and whistles", such as a subtitle, footnotes on title, subtitle and authors, as well as in the text, and every optional component (e.g. Acknowledgments, Additional Authors, Appendices), not to mention examples of equations, theorems, tables and figures.[3]

We've removed many of the more esoteric tricks here because either they'll never be used (e.g., multiple authors) or are used *very* rarely (e.g., appendices). Refer to the original ACM document for more of those fancy examples.

Needs more work

Keywords

ACM proceedings, LaTeX, text tagging

1. INTRODUCTION

The *proceedings* are the records of a conference, and conference editors like ACM seek to give their conference by-products a uniform, high-quality appearance. We also would like our proceedings to look highly professional, so we're borrowing heavily from the ACM formatting guidelines. These include some rigid requirements for the format of the proceedings documents: there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes (for instance, 9 point for body copy), a specified live area (18 × 23.5 cm [7" × 9.25"]) centered on the page, specified size of margins (2.54cm [1"] top and bottom and 1.9cm [.75"] left and right; specified column width (8.45cm [3.33"]) and gutter size (.083cm [.33"]).

I really like this section.

UMM CSci Senior Seminar Conference, December 2015 Morris, MN.

The good news is, with only a handful of manual settings,[1] the LaTeX document class file handles all of this for you.

The remainder of this document is concerned with showing, in the context of an "actual" document, the LaTeX commands specifically available for denoting the structure of a proceedings paper, rather than with giving rigorous descriptions or explanations of such commands. Section ?? introduces the main examples of formatting, and Section ?? wraps things up.

1.1 My nifty subsection

I want to refer to Section 2.1 and Figure ??. It would also be nice to cite [1] and [3] and [2].

Let's make an equation:

$$\text{area} = \pi r^2$$

I want to refer to Section ?? and Figure ??. It would also be nice to cite [1]. We can also do inline equations: $s = \sum_{i=0}^{N} x_i$. I want to refer to Section ?? and Figure ??. It would also be nice to cite [1].

$$s = \sum_{i=0}^{N} x_i$$

2. BACKGROUND

2.1 Evolutionary Computation

2.2 Genetic Programming

2.3 Hyper Heuristics

2.4 History of AAD

3. GENETIC PROGRAMMING VARIANTS

3.1 Tree-based Genetic Programming

3.2 Stack-based Genetic Programming

4. AUTOCONSTRUCTION

4.1 Push and Plush

[1]One of these, the `\alignauthor` command, you have already used; another, `\balancecolumns` will be used in your very last run of LaTeX to ensure balanced column heights on the last page.

4.2 AutoDoG

4.3 Results

5. CONCLUSIONS AND FUTURE WORK

6. ACKNOWLEDGMENTS

7. REFERENCES

[1] S. Aaronson. Guest column: NP-complete problems and physical reality. *SIGACT News*, 36:30–52, March 2005.

[2] Eva. private communication.

[3] G. L. Pappa, G. Ochoa, M. R. Hyde, A. A. Freitas, J. Woodward, and J. Swan. Contrasting meta-learning and hyper-heuristic research: the role of evolutionary algorithms. *Genetic Programming and Evolvable Machines*, 15(1):3–35.