Sample Paper for CEC 2007: The IEEE Congress on Evolutionary Computation

K. C. Tan, *Member, IEEE*

***Abstract*— The abstract goes here. What you need to do is to insert your abstract here. Please try to make it less than 150 words. We suggest that you read this document carefully before you begin preparing your manuscript. IEEE does not want conference papers to have keywords so you should remove your keyword list. Also, at this time, IEEE only has some general guidelines about the format for conference papers. It is up to each individual conference to decide which format to use. In order to have a uniform look for all papers published in the CEC 2007 Proceeding, we require that every author follow the format of this sample paper. This sample paper is for latex users. Authors may use the sample paper here to produce their own papers by following the same format as this sample paper.**

I. Introduction

If you have an introduction for your paper, put it here. This sample file is intended to serve as a "starter file." You need to cut out our text and then insert your text into this file.

A. Subsection Heading Here

Note that you need to use \subsection. Subsection text goes here, if applicable. You may or may not have any subsections. That is OK.

1) Subsubsection Heading: Insert subsubsection text here. Same thing, you may or may not have any subsubsections. That is fine.

2) About This Template: This sample paper is for latex users. Authors may use the sample paper here to produce their own paper. WORD users can also download the template file for WORD posted on the CEC 2007 website.

B. Page layout

- IEEE now only accepts 100% Xplore compliant papers prepared in PDF format. Please make sure that you follow these guidelines in preparing your PDF files. Violations of any of these specifications may result in rejection of your papers.
- Paper size: US letter format (8.5×11 in) or 216×278 mm.
- File size limitation: 2.0 MB.
- Paper length: Maximum 8 pages, including figures, tables and references. In exceptional circumstances up to two additional pages will be permitted for a charge of $150 per additional page.
- Paper formatting: Double column, single spaced, 10pt font.
- Text width: 7.0 in (178 mm) and text height: 9.375 in (240 mm).
  All text and figures must be contained in the 178×240 mm image area.
- The left/right/bottom margin must be 0.75 in (19 mm).
- The top margin must be 0.75 in (19 mm), except for the title page where it must be 1 in (25 mm).
- Text should appear in two columns, each 3.4 in (86.5 mm) wide with 0.2 in (5 mm) space between columns.
- Do NOT page number your manuscript.
- Unix LaTeX users please use the following command:
  - latex mypaper
  - dvips -Ppdf -G0 -tletter mypaper.dvi
  - ps2pdf mypaper.ps mypaper.pdf

The page size and margin settings in IEEEtran.cls are set for IEEE Transactions papers. We have made some adjustments to produce this sample paper.

Also, please note that IEEE PDF eXpress will be made available to assist you in creating the IEEE Xplore compliant PDF file for the camera-ready submissions.

II. Main Results

The main results and findings go here. You may also have a section for Preliminaries before this section.

First, if you do not want to number an equation, do not use \begin–\end. You can either use \[–\] or $$–$$. For example, we have

$$\dot{x} = f(x,u) + g(x,u)$$

or

$$\ddot{s} = G(s,t)$$

where f, g, and G are functions. It is recommended that you do not number an equation if it will not be cited in your paper.

Equation (1) is numbered! The following equation is produced using \begin{equation}–\end{equation}. The main objective function for each unit can be represented by a quadratic cost function given by

$$F_i(P_i) = a_i + b_iP_i + c_iP_i^2 \tag{1}$$

where a_i, b_i, and c_i in (1) are the fuel consumption cost coefficients of unit i, and P_i represents the value of the power to be determined for unit i.

Recently, it is popular to use \begin{align}–\end{align} instead of \begin{eqnarray}–\end{eqnarray}. Equation (2)

K. C. Tan is with the Department of Electrical and Computer Engineering,National University of Singapore, 4 Enginnering Drive 3, Sinagpore (phone: 65-6516-2721; fax: 65-6779-1103; email: eletankc@nus.edu.sg).

is produced using \begin{align}–\end{align}. The objective function for each unit can be represented by

$$\begin{aligned}\dot{x}_l &= \sum_{i=1}^{m} \frac{c_{P_{x_i}} e^{k_{x_i}\bar{x}_i} + c_{N_{x_i}} e^{-k_{x_i}\bar{x}_i}}{e^{k_{x_i}\bar{x}_i} + e^{-k_{x_i}\bar{x}_i}} \\ &\quad + \frac{1}{2}\sum_{j}^{q}(c_{Pu_j} + c_{N_{u_j}}) \\ y &= A_0 + A_1 \tanh(K_x \bar{x}) + B \tanh(K_u \bar{u}) \\ &= F(x), \qquad (2)\end{aligned}$$

where $F(x)$ is a function.

Well, the same equation, when it is produced using \begin{eqnarray}–\end{eqnarray} becomes (3):

$$\begin{aligned}\dot{x}_l &= \sum_{i=1}^{m} \frac{c_{P_{x_i}} e^{k_{x_i}\bar{x}_i} + c_{N_{x_i}} e^{-k_{x_i}\bar{x}_i}}{e^{k_{x_i}\bar{x}_i} + e^{-k_{x_i}\bar{x}_i}} \\ &\quad + \frac{1}{2}\sum_{j}^{q}(c_{Pu_j} + c_{N_{u_j}}) \\ y &= A_0 + A_1 \tanh(K_x \bar{x}) + B \tanh(K_u \bar{u}) \\ &= F(x), \qquad (3)\end{aligned}$$

where $F(x)$ is a function. You get the idea!

A. *Example of a Figure*

An example of a floating figure using the graphicx package. Note that \label must occur AFTER (or within) \caption. For figures, \caption should occur after the \includegraphics. You also need to know how to cite your figure. Here is an example: Figure 1 show our simulation results.

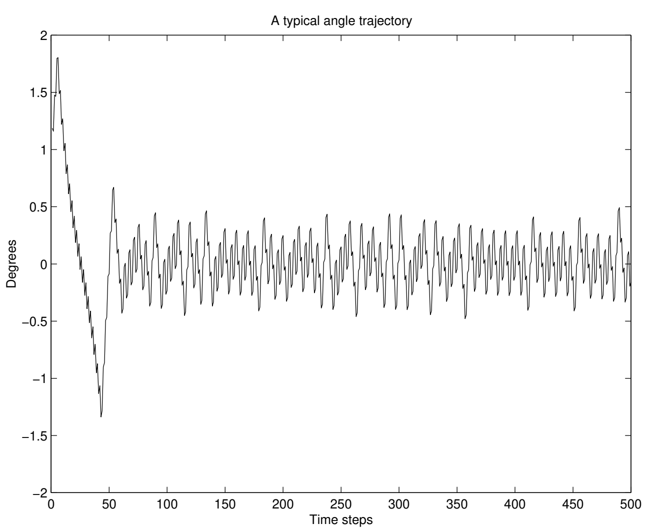

Fig. 1. Simulation results

B. *Figures and Tables*

Please follow the style in the sample paper when generating your figures and tables.

TABLE I
PAGE LIMIT

Page limits	8
Excess page charge	$150/page

C. *Page Limit and Overlength Page Charges*

A paper submitted to this conference should be prepared in a single-spaced, two-column format and its length must be kept to 8 pages and below. In exceptional circumstances up to two additional pages will be permitted for a charge of $150 per additional page. Table I shows the page limit and page charge schedule.

Another example of table is shown in Table II.

TABLE II
COMPARISON RESULTS WITH METHODS IN [2] (40 UNIT SYSTEM WITH VALVE-POINT EFFECTS)

Method	Mean time	Best time	Mean cost	Maximum cost	Minimum cost
CEP	928.36	926.20	124793.5	126902.9	123488.3
FEP	646.16	644.28	124119.4	127245.9	122679.7
MFEP	1056.8	1054.2	123489.7	124356.5	122647.6
IFEP	632.67	630.36	123382.0	125740.6	122624.4
TM	94.28	91.16	123078.2	124693.8	122477.8

III. CONCLUSIONS

The conclusion goes here. This sample paper is for latex users. Authors may follow the sample paper here to produce their own papers by following the same format as this sample paper.

APPENDIX

Put your appendix here if you have any.

ACKNOWLEDGMENT

The authors would like to thank Mr. XYZ for his/her help. This work was supported in part by the National Science Foundation under grant no. XXXXX, etc.

REFERENCES

[1] P. G. DeLima and G. G. Yen, “Multiple model fault tolerant control using globalized dual heuristic programming,” *Proc. IEEE International Symposium on Intelligent Control*, Houston, TX, Sept. 2003, pp. 523–528. (Invited paper)
[2] A. N. Michel and R. K. Miller, *Qualitative Analysis of Large Scale Dynamical Systems*, New York: Academic Press, 1977.
[3] D. V. Prokhorov, *Adaptive Critic Designs and Their Applications*, Ph.D. Dissertation, Texas Tech University, Lubbock, TX, Oct. 1997.
[4] J. Si, A. Barto, W. Powell, and D. Wunsch, Editors, *Handbook of Learning and Approximate Dynamic Programming*, New York: IEEE and Wiley, 2004.
[5] P. J. Werbos, “Approximate dynamic programming for real-time control and neural modeling,” in *Handbook of Intelligent Control: Neural, Fuzzy, and Adaptive Approaches* (Chapter 13), Edited by D. A. White and D. A. Sofge, New York, NY: Van Nostrand Reinhold, 1992.
[6] P. J. Werbos, “Building and understanding adaptive systems: A statistical/numerical approach to factory automation and brain research,” *IEEE Transactions on Systems, Man, and Cybernetics*, vol. SMC-17, pp. 7–20, Jan./Feb. 1987.