International Workshops on Image Processing Theory, Tools and Applications

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***Abstract*— `ieeetran` is a modified version of the `IEEEtran` class. This document describes how to use `ieeetran` class with LaTeX to produce high quality typeset papers that are suitable for submission to the International Workshops on Image Processing Theory, Tools and Applications. Authors are kindly requested to follow the instructions found in this document.**

***Keywords*— Image processing theory, Image processing tools, Image processing applications, Template, Typesetting.**

I. Introduction

The international Workshops on Image Processing Theory, Tools and Applications aims at gathering challenging international researchers, innovators, educators, and practitioners in image processing theory and tools, for attending extensive educational high level materials, sharing their achievements, exchanging their experiences and discussing future orientations.

By using the `ieeetran` class file, a computer running LaTeX, and a basic understanding of the LaTeX language, an author can produce professional quality typeset research papers very quickly, inexpensively, and with minimal effort. The purpose of this document is to serve as a user guide of `ieeetran` LaTeX class.

It is assumed that the reader has at least a basic working knowledge of LaTeX. Those so lacking are strongly encouraged to read some of the excellent literature on the subject. We refer the reader to the following sites: http://tex.loria.fr and http://www.miktex.org.

II. Headings

This part of the document containing its title, author names and affiliations.

A. Paper title

The paper title is inserted as follows:

```
\title{Title of the paper}
```

Line breaks (`\\`) may be used to equalize the length of the title lines.

B. Author names and affiliations

Author names and associated information are declared as follows:

```
\author{\authorblockN{
 Michael Shell\authorrefmark{1},
 Homer Simpson\authorrefmark{2},
 James Kirk\authorrefmark{3},
 Montgomery Scott\authorrefmark{3}
 and Eld on Tyrell\authorrefmark{4}}
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nd Computer Engineering\\
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\authorblockA{\authorrefmark{2}
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email: homer@thesimpsons.com}
\authorblockA{\authorrefmark{3}
Starfleet Academy, Sa n Francisco,
California 96678-2391}
\authorblockA{\authorrefmark{4}
Tyrell Inc., 123 Replicant Street,
 Los Angeles, California 90210--4321}}
```

III. Abstract and Keywords

The abstract is generally the first part of a paper. The abstract text is placed within the abstract environment:

```
\begin{abstract}
This paper deals with ...
\end{abstract}
```

The IPTA papers should also include a list of (4 to 6) key words which can be declared within the `keywords` environment:

```
\begin{keywords}
    Image processing theory, Image processing too
\end{keywords}
```

IV. Sections

Sections and their headings are declared in the usual LaTeX fashion via `\section{}`, `\subsection{}`, `\subsubsection{}`, and `\paragraph{}`. The numbering for these sections is in arabic numerals except for `\paragraph{}` which is not numbered because, generally, papers should not have such a deep section nesting depth.

V. Mathematical formulas

Mathematical formulas are created using the standard LaTeX environments such as:

```
\begin{equation}
    \label{MPKeq1}
    x^2+2x+5=0
\end{equation}
```

which yields:

$$x^2 + 2x + 5 = 0 \tag{1}$$

For long equations that do not fit to the column width one can use the `\split` environment

```
\begin{equation}
 \label{MPKeq2}
 \begin{split}
 y(t) = &\left\{\frac{\tau^n \sin n\pi}{\pi}
 \int_0^\infty \frac{x^n e^{-xt}dx}
 {1+2(\tau x)^n\cos n\pi+(\tau x)^{2n}}\right\}u(t)\\
 &-\left\{\frac{2}{n}\tau^{-1}e^{t\tau^{-1}
 \cos\frac{\pi}{n}}\cos\left(t\tau^{-1}
 \sin\frac{\pi}{n}+\frac{\pi}{n}\right)\right\}u(t).
 \end{split}
\end{equation}
```

which yields:

$$\begin{aligned} y(t) = &\left\{ \frac{\tau^n \sin n\pi}{\pi} \int_0^\infty \frac{x^n e^{-xt} dx}{1 + 2(\tau x)^n \cos n\pi + (\tau x)^{2n}} \right\} u(t) \\ &- \left\{ \frac{2}{n} \tau^{-1} e^{t\tau^{-1} \cos \frac{\pi}{n}} \cos\left(t\tau^{-1} \sin \frac{\pi}{n} + \frac{\pi}{n} \right) \right\} u(t). \end{aligned} \tag{2}$$

VI. Figures

Figures are handled in the standard LaTeX manner. For example:

```
\begin{figure}[!ht]
\centering
\includegraphics[width=7cm]{coeur3.png}
\caption{Inverted pendulum.}
\label{MPKfig1}
\end{figure}
```

The `\includegraphics` command is the modern, preferred, way of including images and provides a flexible interface that makes it easy to scale graphics to size. To use it, the `graphicx` package must first be loaded:

```
\usepackage{graphicx}
```

Note that: (1) figures should be centered via the LaTeX `\centering` command. This is a better approach than using the `center` environment which adds unwanted vertical spacing; (2) the caption follows the graphic; and (3) any labels must be declared after (or within) the caption command. When referencing figure numbers in the main text (via `\ref{}`), authors should use the abbreviation "Fig." rather than "Figure" except when starting the sentence. For example:

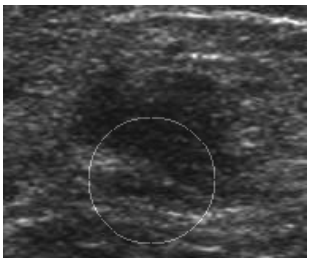
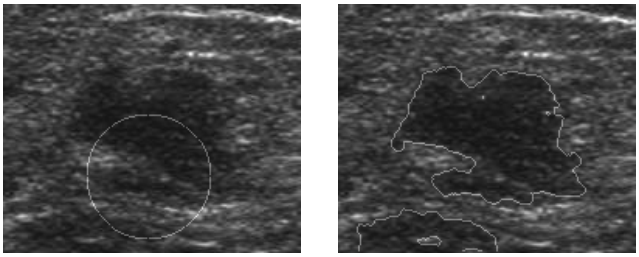


Fig. 1. Initialization.

Figure 1 shows the initialization step. The convergence is showed in Fig. 2.



a b

Fig. 2. Image segmentation: a) Initialization, b) convergence towards final contours.

The above figure is created using the freeware `Ipe6.0 preview23` available on the following site `http://ipe.compgeom.org/`.

Encapsulated postscript (`.eps`) figures can be generated from MATLAB by typing the following in the command window:
`print filename.eps -depsc`.

VII. Tables

Tables are defined in the same manner as figures except that captions should appear above the tables. When referencing table numbers in the main text no abbreviation is used. Next we can see an example of a table:

```
\begin{table}[!ht]
 \centering
 \caption{Note that units should
 appear in normal fonts and
 \textbf{NOT} italic.}
    \begin{tabular}{|l|l|}
        \hline
         & Parameter values of IM\\
        \hline
        $L_s $ & 195.2 mH\\
        $R_s$ & 0.830 $\Omega$\\
        $J$ & 0.002 Kg m$^2$\\
        $p$ & 2\\
        $F $ & 0.001 Kg m$^2$/s\\
        \hline
    \end{tabular}
\end{table}
```

produces

Table 1. Note that units should appear in normal fonts and **NOT** italic.

	Parameter values of IM
L_s	195.2 mH
R_s	0.830 Ω
J	0.002 Kg m^2
p	2
F	0.001 Kg m^2/s

VIII. Citation

Citations are made using the standard LaTeX command `\cite{}`, this will produce a number inside square brackets. Multiple citations are included within one `\cite{}` command separated with commas. *e.g.*

Local stabilization of minimum phase systems are studied in [1], [2].
(`\cite{SCL-11-009,I3EAC-36-1228}`)

For more details on input output linearization the reader is referred to [3]. (`\cite{isidori}`)

Nonlinear dynamic systems are dealt with in [1], [2], [3], [5].
(`\cite{SCL-11-009,I3EAC-36-1228,`)
`isidori,phdthesis}`)

IX. References

References are declared at the end of the article within the `thebibliography` environment.

```
\begin{thebibliography}{1}
\bibitem{}...

\bibitem{}...

\end{thebibliography}
```

Journal articles are declared as follows, where the volume number is a necessary entry and the number of the issue is optional and put in parenthesis:

```
\begin{thebibliography}{1}
\bibitem{SCL-11-009}
C. I. Byrnes and A. Isidori.
\newblock Local stabilization
of minimum-phase nonlinear systems.
\newblock {\em Systems \&
Control Letters}, 11:9--17, 1988.

\bibitem{I3EAC-36-1228}
C. I. Byrnes, A. Isidori, and J. C. Willems.
\newblock Passivity feedback equivalence
and the global stabilization of minimum
phase nonlinear systems.
\newblock {\em
IEEE Trans. on Automatic Control},
36(11):1228--1240, 1991.
\end{thebibliography}
```

Books are declared in the following manner:

```
\begin{thebibliography}{1}
\bibitem{isidori}
Alberto Isidori.
\newblock {\em Nonlinear Control Systems}.
\newblock Springer-Verlag,
United Kingdom, 3rd edition, 1995.

\bibitem{khalil}
Hassan K. Khalil.
\newblock {\em Nonlinear Systems}.
\newblock Macmillan, New York, 1992.
\end{thebibliography}
```

PhD theses and conference articles are declared as follows:

```
\begin{thebibliography}{1}
\bibitem{phdthesis}
Alessandro Astolfi.
\newblock {\em Asymptotic stabilization of
              nonholonomic systems
              with discontinuous control}.
\newblock PhD thesis, Swiss Federal
Institute of Technology,
Zurich-Switzerland, 1996.

\bibitem{conference}
Dupont David.
\newblock An adaptive output tracking
of linearizable nonlinear systems.
\newblock In {\em Int. Conf. on
Systems, Signals \&  Decision },
CD-ROM, Sousse-Tunisia, March 2003.
\end{thebibliography}
```

X. Appendix

The appendix is declared using the command `\appendix[title of appendix]`, if only one appendix is to be included. If more than one appendix will be included then we use the command `\appendices` and then we use `\section{title of appendix}` Inside the appendix subsections are not allowed.

Appendix I
Theorem 1

Theorem 1: Suppose $c \geq 0$, $r(.)$ and $k(.)$ are nonnegative valued continuous functions, and suppose

$$r(t) \leq c + \int_0^t k(\tau) r(\tau) d\tau, \quad \forall t \in [0, T] \tag{3}$$

Then

$$r(t) \leq c \ \exp\left[\int_0^t k(\tau) d\tau\right], \quad \forall t \in [0, T] \tag{4}$$

Appendix II
Lyapunov equation

The equations in the appendix are numbered with the corresponding appendix letter.

$$A^T P + PA = -Q \tag{5}$$

ACKNOWLEDGMENT

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Acknowledgment is added as an unnumbered section using the standard LaTeX command `\section*{Acknowledgment}`.

REFERENCES

[1] C. I. Byrnes and A. Isidori. Local stabilization of minimum-phase nonlinear systems. *Systems & Control Letters*, 11:9–17, 1988.

[2] C. I. Byrnes, A. Isidori, and J. C. Willems. Passivity feedback equivalence and the global stabilization of minimum phase nonlinear systems. *IEEE Trans. on Automatic Control*, 36(11):1228–1240, 1991.

[3] Alberto Isidori. *Nonlinear Control Systems*. Springer-Verlag, United Kingdom, 3rd edition, 1995.

[4] Hassan K. Khalil. *Nonlinear Systems*. Macmillan, New York, 1992.

[5] Alessandro Astolfi. *Asymptotic stabilization of nonholonomic systems with discontinuous control*. PhD thesis, Swiss Federal Institute of Technology , Zurich-Switzerland, 1996.

[6] Moez Feki. An adaptive output tracking of linearizable nonlinear systems. In *Int. Conf. on Systems, Signals & Decision* , CD–ROM, Sousse-Tunisia, March 2003.