An Informative Title: An Optional Subtitle

First Author, Another Author
First Affiliation

and

Someone Else
Second Affiliation

Use as many key words as possible in your abstract. Limit its length to 960 characters. For an empirical study, use 100 to 120 words to describe the problem, participants, method, findings, and conclusions. For a theoretical or review article, use 75 to 100 words to state the article's topic, thesis, scope, sources, and conclusions. Define all abbreviations and unique terms. Spell out names of tests and technologies. Use paraphrases, not quotations.

Keywords: Human-robot interaction, recognition, sensors, emotions

1. Introduction

This article is a description of how to create a document of the appropriate style for a submission to the *Journal of Human-Robot Interaction* (JHRI). The journal is an inter-disciplinary journal, so it is useful to note that different disciplines use the term "style" differently. This article should help you understand both usages, and create a document that can be easily read and understood by readers from a wide variety of disciplines.

The first use of the term "style" refers to typesetting and layout issues. The `sample_final_manuscript.tex` document gives an example of how to use the `apa_HRI.cls` document and how to select appropriate LATEX settings. There is also a Word©document that serves as a template for the typesetting and layout issues.

The second use of the term "style" refers to conforming to standard headings, tables, figures, references and citation formats. The *Journal of Human-Robot Interaction* uses the standards from the American Psychological Association (APA) as the basis for these style settings. Please note that the LATEX formatting files take care of most of the reference and citation issues.

More importantly, please note that note that empirical-based and behavioral papers should conform closely to the APA style for headings, etc., but that most technical and design papers will deviate from this standard. If you have questions, please contact your area editor.

2. The Title Page

The HRI Journal format has specific requirements for getting the document to format correctly. Please follow these guidelines closely.

2.1 LaTeX Options, Document Class, and Required Packages

Use the lettersize, apacite, twoside, and HRI options when specifying the document class.

```
\documentclass[lettersize, apacite, twoside, HRI]{apa_HRI}
```

To get the correct fonts for the HRI Journal format, the times package is required:

```
\usepackage{times}
```

2.2 Title, Author(s), and Headers

A paper title, list of authors, and some header information is required. All of this information must be given before using the \begindocument command.

The paper title is specified using the following command:

```
\title{An Informative Title: An Optional Subtitle}
```

A sole author is created using the following commands:

```
\author{Sole Author}
\affiliation{Author Affiliation}
```

Multiple authors from different affiliations can be created by uncommenting the appropriate code in the sample .tex document. For example, three authors with two affiliations can be created using the following commands:

```
\twoauthors{First Author, Another Author}{Someone Else}
\twoaffiliations{First Affiliation}{Second Affiliation}
```

The author's address and email is included in a footnote at the bottom of the first page. The address and email are only required for the corresponding author, but addresses and emails can be included for all authors. The command is as follows:

```
\acknowledgements{Address, email}
```

The HRI journal format uses running headers at the top of each page, with the title and author alternating between pages. Use the following commands to specify these headers:

```
\rightheader{Short Title}
\leftheader{LastName1 et al.}
```

When there are one or two authors, use the last names of the authors for the left header. When there are three or more authors, use the last name of the first author followed by "et al.", noting the proper punctuation with the trailing period.

2.3 Abstract and Keywords

The HRI Journal format also requires an abstract and a list of keywords. This information must be given before using the \begindocument command. The abstract and list of keywords are created as follows:

```
\abstract{This is where the abstract goes.}
\keywords{And here are the keywords.}
```

After specifying the title, author, abstract, and keywords, you can begin the document and make the title.

3. Sections

Section numbering uses a variation of the APA style, but changed to include section numbering. Formatting a submission to the HRI Journal requires that you use the standard LaTeX section commands, as illustrated below.

```
\pagebreak
\section{Section Name}
section text
\subsection{Subsection Name}
subsection text
\subsubsection{Subsubsection Name}
subsubsection text
\paragraph{Paragraph Name}
paragraph text
\subparagraph{Subparagraph Name}
subparagraph text
```

Note that paragraphs and subparagraphs are not numbered.

Note that it is permissible to skip the third level (Subsection Name) to paragraph name, i.e., to the fourth level. This would be appropriate if there were only one subsubsection, for example. According to APA style guide that requires a change from `Paragraph Name` to `Paragraph name.`. That is, only the first letter of the paragraph title is capitalized, and the title is followed by a period. It is permissible for more than one paragraph to have a Paragraph name. (That is, the fourth level can be a type of subsubsection.) The LaTeX template does not automatically provide this functionality, but following this guideline is easily done using

```
\noindent {\it Paragraph name.}

paragraph text
```

The HRI Journal format allows unnumbered sections following APA format, but this is not yet implemented in the `apa_HRI.cls` file. You're on your own if you want to do unnumbered APA style sectioning using LaTeX ; we recommend using the Word Template. We will work towards providing this functionality in LaTeX as time progresses.

4. Figures

Standard LaTeX figure commands apply when you use the `apa_HRI.cls` file.

Please be sure that readers can see the labels on your figures, and that both the x and y-axes are labeled. Avoid using unnecessarily fancy graphics such as three-dimensional columns that do not add new information.

Figure 1 shows one example for how to represent trends. Note that this example is a very low quality graphic intended only to show a way of representing data; figures in the journal should be much higher quality! One way to show differences across conditions in a graph is to use letters to label which means are significantly different with the others. If you test many means, be sure to adjust for the number of significance tests using (a) planned contrasts, (b) students t tests or Tukey tests, or (c) Bonferroni adjustments of your p values.
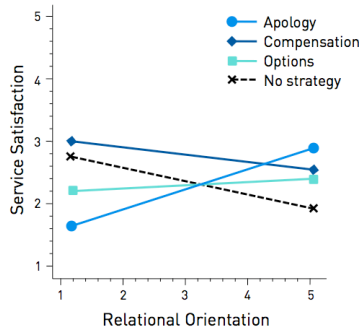
Figure 1. The relationship between participants' relational orientations and their satisfaction with a robot's service.

Figure 2 shows another example of a figure. Here, the author has used a diagram to convey information about his method.

5. Tables

Standard LaTeX table commands also apply. Table 1 was created using the following commands:

```
\begin{table}[htb]
  \caption{Be sure to put the caption at the top
     of the table environment so that the caption
     appears above the table.}
  \begin{tabular}{ | c | c |c| c | c |} \hline
    & \multicolumn{2}{c|}{\textbf{Variable 2}} &
            \multicolumn{2}{c|}{\textbf{Variable 3 }}
            \\ \cline{2-5}
  \textbf{Variable 1}  & \textbf {Low} &
            \textbf {High} & \textbf {Small}
            & \textbf {Big} \\\hline
   News & 47.1(3.0) & 14.1 (.1) & 26.9 (4.0)
            & 13.8 (2.0) \\\hline
   Politics & 34.7 (2.0) & 28.6 (.1) & 26.4 (4.0)
            & 25.9 (2.6) \\\hline
   \multicolumn{5}{c}{}
     % This is a patch to fix a bug in the table command.
  \end{tabular}
  \label{tab:specificConditions}
\end{table}
```

Note that the caption command *must appear at the top of the definition* because the HRI Journal style requires captions that appear above the table. Note also that a common formatting error is to make a table wider than the linewidth. Rearrange such tables to avoid this formatting error.
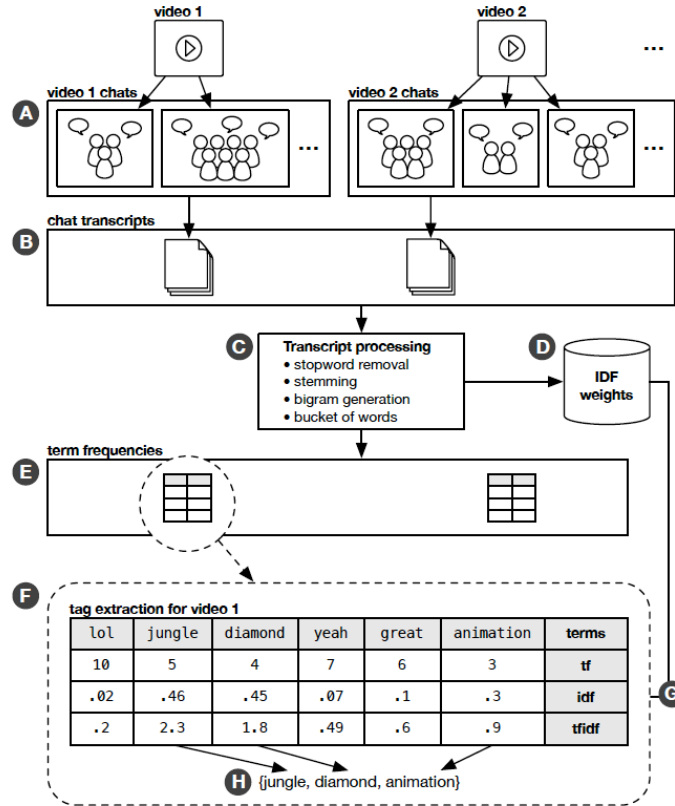
Figure 2. Tag extraction process. A. Groups of views chat while watching a video. B. Chat transcripts collected. C. Transcripts processed into a collection of stemmed terms. D. IDF weights computed. E. Term frequency tables computed for each video. F. Tag extraction process computes tF-IDF weights. Example shows terms spoken during video 1. G. IDF weights are global across all videos. H. Tag extraction for terms with the highest TF-IDF weights.

Please give adequate information not just for current readers but also for subsequent meta-analyses that may use your results. To be useful, you should present means and standard errors (if you have done analyses of variance or regressions) or standard deviations.

6. Statistics

Here are some examples of how to cite various statistical tests in your paper. Typically you would also point readers to a table or figure, or insert the means and standard error values into your text.

ANOVA results are cited using the F test (e.g., $F(1, 38) = 4.94$, $p = .04$). F and p are italicized. Give the exact p value to two decimal places except when greater better than $p < .01$. Try to avoid more than two decimal places, as readers are not very interested in exact values; comparisons are more important. The F value is followed by the degrees of freedom in the numerator and denominator. Here is how one author of a mobile phone study (Author, 2010) reported an interaction effect:

Table 1: Be sure to put the caption at the top of the table environment so that the caption appears above the table.

	Variable 2		Variable 3	
Variable 1	**Low**	**High**	**Small**	**Big**
News	47.1(3.0)	14.1 (.1)	26.9 (4.0)	13.8 (2.0)
Politics	34.7 (2.0)	28.6 (.1)	26.4 (4.0)	25.9 (2.6)

The data were analyzed in a 2 (Age: young vs. old) x 2 (Device: Phone A vs. B) mixed measures analysis of variance (ANOVA). We found an interaction of Age X Phone ($F[1, 38] = 26.18$, $p < .0001$). The contrast showed older people using Phone B took considerably longer to complete the task, $F(1, 38) = 69.16$, $p = .02$. (p. 6).

Correlations using product moment tests are reported using r (e.g., $r(200) = .19$). The number in parenthesis following the r value represents the degrees of freedom (*df*), or N 1. Including the degrees of freedom provides the reader with a sense of statistical significance, in that correlations are highly sensitive to the number of data points. For instance, with 200 scores on both variables, .19 will be a significant correlation whereas with only 30 people, it will not be statistically significant.

T tests (e.g., $t[20] = 100.2$, $p < .01$) are reported giving the degrees of freedom in the denominator. (The numerator *df* is always 1, as is true of correlations.) Notice how brackets are placed inside parentheses to reduce confusion.

7.   References

There are many rules for citing references using the APA format, but you should satisfy most of them by following the template. This section provides a few examples to emphasize some of the most fundamental rules. An excellent online resource can be found at `http://www.nova.edu/library/dils/lessons/apa/print.htm`.

Citing two papers with multiple authors, but the same first author (Parasuraman, Sheridan, & Wickens, 2000; Parasuraman & Riley, 1997).

A collection (Balch & Parker, 2002).

A journal paper (Parasuraman & Riley, 1997). Note that APA journal references do not include issue number.

A paper in a conference proceedings (Olsen, Wood, & Turner, 2004).

A paper with many authors (Bradshaw et al., 2002).

Some papers appear in electronic-only proceedings or journals. For some of those journals, no page number or publisher address is included. If this is the case, please include the Digital Object Identifier (DOI) (see `http://www.doi.org/`.

DOI's must be included for all references that have them. You can look up the DOI for a published paper by going to `http://www.crossref.org/guestquery/` and entering bibilographic information. This form will return the DOI in as a link to a webpage. Include this webpage in the `.bib` file using the PAGES field as illustrated in the *sample.bib* file as follows:
`Pages = {230-253, http://dx.doi.org/10.1518/001872097778543886}`.
Note that the URL field is automatically stripped out by the *apa.cls* file, so including the DOI by the page number is a workaround until we fix this.

8. Quotations

For long quotations, please indent the quote as follows:

> Four score and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty, and dedicated to the proposition that all men are created equal.

> Now we are engaged in a great civil war, testing whether that nation, or any nation, so conceived and so dedicated, can long endure. We are met on a great battle-field of that war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this.

> Its parenthetical citation should be placed after the block's last item of punctuation.

9. Section Titles

The titles of the different sections will vary widely across papers, but there are some good practices that can be followed. This section identifies some common practices used in papers that report empirical results from experiments involving humans subjects. The examples are taken from `http://www.uwsp.edu/psych/mp/APA/apa4b.htm`,

```
\section{Introduction}
\section{Related Literature/Work}
\section{Method}
\subsection{Subjects/Participants}
\subsection{Apparatus/Materials}
\subsection{Design}
\subsection{Procedure}
\subsection{Measures}
\section{Results}
\section{Discussion}
\section{Conclusion}
```

The discussion section often includes a statement of the limitations of the results. The design subsection often includes a clear list of hypotheses to be evaluated.

Please note that all papers should not conform to this pattern of sectioning. It is provided only as an example of some of the sections that are often included in empirical studies involving human participants.

10. Acknowledgements

Acknowledgements should be given at the end of the paper. You should acknowledge anyone who reviewed and helped you with your work here. Also acknowledge all sources of funding. This is also the place to declare any conflicts of interest.

Use the following commands for acknowledgements:

```
\section*{Acknowledgements} Acknowledgement text
```

11. Biblography

The bibliography is created using the following commands:

```
\bibliography{sample.bib}
```

Unlike many LaTeX documents, no biliographystyle command is used since this is implied by the apacite and apa_HRI.cls options.

12. Author Affiliations

It is good practice to include author affiliations and contact information. For this journal, affiliation and contact information is included after the biliography using the following commands:

```
\hrule
\vspace*{.1in}
 First author, Affiliation, Institution, City, Country.
 Email: author1\@gmail.com.
 Second author, Affiliation, Institution, City, Country.
 Email: author2\@gmail.com
```

References

Balch, T., & Parker, L. E. (Eds.). (2002). *Robot teams: From diversity to polymorphism*. Natick, Massachusetts: A. K. Peters Ltd.

Bradshaw, J. M., Sierhuis, M., Acquisti, A., Feltovich, P., Hoffman, R., Jeffers, R., et al. (2002). Agent autonomy. In H. Hexmoor, R. Falcone, & C. Castelfranchi (Eds.), *Adjustable autonomy and human-agent teamwork in practice: An interim report on space applications*. Norwell, Massachusetts: Kluwer Academic.

Olsen, D. R., Wood, S. B., & Turner, J. (2004). Metrics for human driving of multiple robots. In *Proceedings of the 2004 IEEE intl. conf. on robotics and automation* (Vol. 3, pp. 2315–2320). New Orleans, LA, USA: IEEE.

Parasuraman, R., & Riley, V. (1997). Humans and automation: Use, misuse, disuse, abuse. *Human Factors*, *39*(2), 230-253, http://dx.doi.org/10.1518/001872097778543886.

Parasuraman, R., Sheridan, T. B., & Wickens, C. D. (2000, May). A model for types and levels of human interaction with automation. *IEEE Transactions on Systems, Man and Cybernetics – Part A: Systems and Humans*, *30*, 286-297, http://dx.doi.org/10.1109/3468.844354.

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