An Extendable Python Library To Manipulate Sensors Coupled To The Raspberry Pi

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ABSTRACT

The convergence of radio technologies, microprocessors and personal digital electronic devices is leading to the concept of ubiquitous computing in which intelligent, mobile and stationary devices, coordinate with each other to provide for users immediate and universal access to new services transparently, aimed at increasing human capabilities. This work aims to define, implement and validate the design and implementation of an extensible Python library for manipulating sensors / actuators coupled to the Raspberry Pi using the raspberry-GPIO-python module. The library uses the Abstract Factory pattern to ensure that sensors / actuators and events from the same family being used in conjunction with guaranteed way. On other platforms, such as Arduino, the APIs provide libraries that encapsulate the complexity of implementation and offer only the interface to use. These libraries do not yet exist formally for those who want to use Pyton as development language applied to the Raspberry Pi. This article encourages the use of open source technologies, due to the growth of free movement of hardware, inferring the possibility of an alternative for engineers and professionals to develop their projects and provide the dissemination of knowledge. The project also presents the results obtained using some of the implemented sensors, system modeling and results described and analyzed.

Keywords

ACM proceedings, LaTeX, text tagging

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$$\lim_{n \to \infty} x = 0 \tag{1}$$

$$\sum_{i=0}^{\infty} x + 1$$

$$\sum_{i=0}^{\infty} x_i = \int_{0}^{\pi+2} f \tag{2}$$

Table 1: Frequency of Special Characters

Non-English or Math	Frequency	Comments
Ø	1 in 1,000	For Swedish names
π	1 in 5	Common in math
\$	4 in 5	Used in business
Ψ_1^2	1 in 40,000	Unexplained usage

Figure 1: A sample black and white graphic (.eps format).

7.1 Citations
7.2 Tables
7.3 Figures
7.4 Theorem-like Constructs
A *Caveat* for the TEX Expert
8 Conclusions
9 Acknowledgments

This section is optional; it is a location for you to acknowledge grants, funding, editing assistance and what have you. In the present case, for example, the authors would like to thank Gerald Murray of ACM for his help in codifying this *Author's Guide* and the **.cls** and **.tex** files that it describes.

APPENDIX
A Headings in Appendices

The rules about hierarchical headings discussed above for the body of the article are different in the appendices. In the **appendix** environment, the command **section** is used to indicate the start of each Appendix, with alphabetic order designation (i.e. the first is A, the second B, etc.) and a title (if you include one). So, if you need hierarchical structure *within* an Appendix, start with **subsection** as the highest level. Here is an outline of the body of this document in Appendix-appropriate form:

Figure 2: A sample black and white graphic (.eps format) that has been resized with the `epsfig` command.

A.1 Introduction
A.2 The Body of the Paper
A.2.1 Type Changes and Special Characters
A.2.2 Math Equations
A.2.2.1 Inline (In-text) Equations
A.2.2.2 Display Equations
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A.2.4 Tables
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A.2.6 Theorem-like Constructs
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A.4 Acknowledgments
A.5 Additional Authors

This section is inserted by LATEX; you do not insert it. You just add the names and information in the `\additionalauthors` command at the start of the document.

A.6 References

Generated by bibtex from your .bib file. Run latex, then bibtex, then latex twice (to resolve references) to create the .bbl file. Insert that .bbl file into the .tex source file and comment out the command `\thebibliography`.

B More Help for the Hardy

The acm_proc_article-sp document class file itself is chockfull of succinct and helpful comments. If you consider yourself a moderately experienced to expert user of LATEX, you may find reading it useful but please remember not to change it.

Table 2: Some Typical Commands

Command	A Number	Comments
`\alignauthor`	100	Author alignment
`\numberofauthors`	200	Author enumeration
`\table`	300	For tables
`\table*`	400	For wider tables