

Bare Demo of IEEEtran.cls for Journals

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Abstract—The abstract goes here.

Index Terms—IEEEtran, journal, L^AT_EX, paper, template.

I. INTRODUCTION

THIS demo file is intended to serve as a “starter file” for IEEE journal papers produced under L^AT_EX using IEEEtran.cls version 1.7 and later. I wish you the best of success.

mds

January 11, 2007

A. Subsection Heading Here

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1) *Subsubsection Heading Here*: Subsubsection text here.

II. RELATED WORK

There exist variety of systems that have been proposed or developed in recent years for indoor environment monitoring. In this chapter we introduce readers to some of them.

[2] is a theoretical research on environment monitoring. They provide necessary constraints and measured phenomena to implement any of structural, indoor and extreme event monitoring. For indoor environment monitoring temperature, humidity, true-light sensors, infrared-based presence sensors, and chemical sensors are useful and every environment monitoring application should consist of at least of these sensors. They as well point out that “interdisciplinary collaboration between researchers from computer science and structural engineering” is a key requirement for the monitoring of large public buildings.

In [3] is a research that by surveying more than 150 persons in Europe and Asia provide information of what environmental factors are important and how to present them to users, to build indoor environment monitoring system. The emphasis is put on designing easy to use and easy to understand user interface of such systems.

One example of environmental monitoring is buildings power consumption monitoring. [4] is such an example. This paper provide a description of the power monitoring system in terms of implementation and use, as well provide some examples of the benefits and savings that have been achieved through its use. By monitored values they calculate: (1) percent power use is calculated for each distribution panel and for each tenant, (2) tenant estimated energy cost month to date,

(3) estimated CO₂ emissions month to date and (4) power use per unit area (watts per square foot). Which then is used to identify and prioritize HVAC optimization programs as well as to assess and quantify the effects of changes on energy consumption.

[4] presents a Building Monitoring system based on Wireless Sensor Networks - BMWSN. Which is a clustering-based network specified for building environment monitoring. In this system temperature/ humidity sensors (SHT11), light sensors (STL2550), and human detection sensors (BISS0001) are used. The cluster-heads perform data aggregation and form a tree hierarchy to forward data to server. System implements simple alarm messaging to inform user of exceeded environmental variables, but no active environment control is implemented.

[5] presents a Building Monitoring system based on Wireless Sensor Networks - BMWSN. Which is a clustering-based network specified for building environment monitoring. In this system temperature/ humidity sensors (SHT11), light sensors (STL2550), and human detection sensors (BISS0001) are used. The cluster-heads perform data aggregation and form a tree hierarchy to forward data to server. System implements simple alarm messaging to inform user of exceeded environmental variables, but no active environment control is implemented.

[6] presents development of a smart sensor network which allows the monitoring of the parameters in the workplace required for ergonomic assessment of working conditions. Phenomena measured are temperature (TC1047A), humidity (HCH-1000), intensity of light (OPT101) and ambient noise (SPM0404LE5H-QB-38342). Proposed system is tested in very small scale compared to the previous systems, but provides insight of how environmental parameters can be measured in workplace.

Besides distributed indoor environment monitoring systems there are other methods used for the same purpose. One such method is by using handheld devices. They are frequently referred to as “Indoor Environmental Quality” instruments. Price for such devices is usually very large drawback, because one such device can cost even several thousand US dollars, furthermore data often can be used only locally or best case scenario saved on SD card. But on high side of such devices is accuracy and variety of sensors in such device. For example IEQ CheckTM produced by Bacharach can use up to 7 different sensors - temperature, relative humidity and variation of Carbon Dioxide (CO₂), Carbon Monoxide (CO), Oxygen (O₂), Formaldehyde (HCHO), Total Volatile Organic Compounds (TVOCs), Nitrogen Dioxide (NO₂), Nitric Oxide (NO), Sulfur Dioxide (SO₂), Ammonia (NH₃), Hydrogen Sulfide (H₂S) and Combustible Gases [7]. Other devices can even detect dust (even nano-scale), measure airflow [8]

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III. CONCLUSION

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APPENDIX A

PROOF OF THE FIRST ZONKLAR EQUATION

Appendix one text goes here.

APPENDIX B

Appendix two text goes here.

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REFERENCES

- [1] H. Kopka and P. W. Daly, *A Guide to L^AT_EX*, 3rd ed. Harlow, England: Addison-Wesley, 1999.
- [2] @ARTICLE{Demirbas05wirelessensor, author = Murat Demirbas, title = Wireless Sensor Networks for Monitoring of Large Public Buildings, journal = Computer Networks, year = 2005, volume = 46, pages = 605–634
- [3] Szu-Cheng Chien, Robert Zach and Ardeshir Mahdavi, DEVELOPING USER INTERFACES FOR MONITORING SYSTEMS IN BUILDINGS, IADIS International Conference Interfaces and Human Computer Interaction 2011, pages 29-36, ISBN: 978-972-8939-52-6
- [4] BLDG services group inc., white paper Power Monitoring in an Office Building, 2011, p. 9, Edmonton Alberta, Canada
- [5] Qifen Dong, Li Yu, Huanjia Lu, Zhen Hong, Yourong Chen, Design of Building Monitoring Systems Based on Wireless Sensor Networks, Wireless Sensor Network, 2010, 2, 703-709, doi:10.4236/wsn.2010.29085
- [6] Teodora Trifonova, Valentina Markova, Ventseslav Draganov, KrasimiraAngelova and Vasil Dimitrov, Smart sensor network for ergonomic evaluation of working environment, ICEST 2013, At Ohrid, Macedonia, Volume: vol.1 pp 371-375
- [7] IEQ Chek, product description, online: http://www.tequipment.net/assets/1/26/Documents/Bacharach/1510_0002/1510_0002_doc_1.pdf, resource accessed on: 26.10.2014
- [8] IEQ instruments, product description, online: <http://www.skinc.com/iaqinstruments.asp>, resource accessed on: 26.10.2014



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