A (Bash) Shell Script for Creating L^{A}T$_E$X-based Book of Abstract in Supporting SeminarPress Application Version 1.31 (July 2015)

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Abstract

In preparing the 6th Asian Physics Symposium on 19-20 August 2015 in Bandung, Indonesia, a conference management system (CMS) known as SeminarPress is used. This CMS already has a lot of features but not in generating Book of Abstract (BoA) directly. In order to support the CMS a shell script named as mkboa.sh is developed and the results of executing it is discussed in this work. Some limitations due to L^{A}T$_E$X restrictions in using some characters are also emphasized.

Keywords: Bash shell script, CMS, SeminarPress 1.31, Book of Abstract, Linux, APS 2015.

Introduction

Workshops are events, where people are pleased to gather in discussing their arguments about things and also a place for personal meeting [1] that could be more specific than some usual conferences. These scientific meetings are nowadays already a need for researchers, since their goal is to bring a community of scientists together and provide opportunities for the scientists to interact [2], where the talks and discussions can be amplified using today information technology in order to extend the reach of the conference deliberations [3]. Let's talk about managing of these important meetings, where it requires a lot of human resources. Though, it can be simplified using conference management systems (CMS), where some of them are developed as Open Source system [4] and limited use [5]. SeminarPress as one of the available CMS has already used in many conferences in Physics Department, Institut Teknologi Bandung, Indonesia [6]. And now it is supporting the 6th Asian Physics Symposium (APS 2015) on 19-20 August 2015 in Bandung, Indonesia.

Creating Book of Abstract

An admin in SeminarPress can access draft of Book of Abstract (BoA), which is located at

```
CONFERENCE/admin/abs.book.php
```

for version 1.31 (July 2015). This draft is simple as (after copying the content from a web browser opening previous link)

```
Book of Abstract Draft


Open this page using Microsoft Internet
Explorer, select it all, copy it, then
paste in Microsoft Word or Excel

BIO-01
```

```
A Density Functional Theory Study of a
Calcium-Montmorillonite: A First
Investigation for Medicine Application


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Abstract


In this study, we performed structural
geometry and electronic properties
calculations of calcium – based clay
mineral for medicine application using
first principles calculation by means
of Density Functional Theory. Here, a
kind of clay mineral used was Ca-
Montmorillonite and it is applied as an
absorber of dangerous metal contained
in a human body which causes
osteoporosis. Osteoporosis is a disease
associated with bone mass decreases.
Since montmorillonite has ability to
exchange its cation (Ca+2), therefore,
it plays an important role in
preventing or/and cure human bone from
osteoporosis. In order to understand
how montmorillonite can do
detoxification in the human body, we
firstly investigated the mechanism of
Ca adsorption on the surface of
montmorillonite in an atomic level
point of view.
```

Topic: Biophysics and Medical Physics

BIO-02

The Increasing of Air and Biogas Mixer Instrument for Generating Friendly Environmental Electricity Power

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Abstract

. The abolition of BBM Subsidize by the government causes increasing of its price, so a solution is necessary to find an alternative energy that is relatively cheap, environmentally friendly and affordable by all layers of society. Biogas is one of the renewable energy resources that are potential to be developed, especially in a farming area, because up until now, animal's excrement is not yet optimally used and it causes problem to environment. In response to this, one innovation to do is to make an instrument which is able to mix biogas and air by venture pipe using the basic theory of fluid mechanic, in order to raise the use of biogas as electricity source. Biogas conversion is done by changing fuel in benzene 5 kilowatt genset to biogas so it becomes a biogas genset. The biogas pressure is controlled when it enters the mixer instrument so that the velocity of biogas when it enters and it comes out the mixer is the same, and it will gain different pressure between biogas and air. By the pressure difference between biogas in the mixer instrument, biogas goes to the burning room so that the conversion of mechanical energy biogas to electricity will happen, and it will be applied as light and society's needs.

Topic: Biophysics and Medical Physics

where the patterns are repeated as the first two abstracts.

In previous conference the BoA was created manually using word processor (Microsoft Word) by reformatting the texts. But it would be not sof efficient in APS 2015 since there are 245 abstracts compared to APS 2012 that had only about 120 abstracts (but submitted only 76 to AIP [7]). Then, SeminarPress must be modified or a help must be constructed in preparing the BoA. Second option is chosen since it is easier than the first one.

One of the alternatives to produce BoA is converting those texts into $\mathrm{L^AT_EX}$ format, compile it, and then convert it into PDF. This means of interpreting texts, which is in the beginning, has no special structures, into some structured information, e.g. title, authors, abstract, keywords, and code. Fortunately, the most structured and ordered information is paper code, which has a form of

```
XXX-NN
```

where the meaning of XXX is listed in Table 1 and NN is paper number in field of XXX.

Table 1. Code of field categories in APS 2015.

No	XXX	Meaning
1	BIO	Biophysics and Medical Physics
2	COM	Computational Physics
3	EPS	Earth and Planetary Sciences
4	INS	Instrumentation and Measurement
5	IDP	Interdisciplinary Physics
6	MAT	Materials Sciences and Technology
7	NUC	Nuclear Science and Engineering
8	EDU	Physics Education
9	THE	Theoretical High Energy Physics

In APS 2012 NN is interpreted slightly different, which is not paper number in each category but paper number in the conference. This means that last NN shows number of papers in the conference.

Occurrence of XXX-NN in file of BoA draft can be obtained using Linux grep command, e.g for field category BIO,

```
grep BIO-
```

with conditions that there is no text with 'BIO-' in title, abstract or keywords.

After that, title is located in the third line after line containing code, where it can achieve using option -A in grep command, which means showing two lines after search patterns.

Affiliation information is a problem. Authors do not fill the information in the same format. Perhaps the SeminarPress should be modified to limit author creativity in writing their affiliations.

There is a word 'Abstract' two lines before content of the abstract and there is also a word 'Keywords' in the same line with the keywords. With similar method in searching code and title, both information about abstract and keywords can be obtained.

Results and discussion

One problem in converting file of BoA draft is the use of special characters, which is interpreted differently by L^{A}T$_E$X. List of them is given in Table 2 and how to overcome their occurrence. There is also another problems.

Table 2. Occurrence of LATEX special characters & other problem and how to overcome them.

No	Problem	Solution
1	#	Change to \# using script
2	%	Change to \% using script
3	^	Manually edit draft to $^$
4	_	Manually edit draft to $_$
5	Abstract. (in beginning of abstract content)	Remove it manually to avoid misinterpretation of search pattern Abstract, which is located two lines before the content.

As the results a BoA in PDF format is produced, where its screenshots are given in Figure 1.

There is reported problem while running the script in Windows using Cygwin, since it was developed in Linux. This problem is due different end-of-line character(s) in the OSs. This script should also be tested also in Mac.

Summary

A (Bash) shell script named `mkboa.sh` has been written to convert file of BoA draft produced by SeminarPress. It can produced L^{A}T$_E$X-based BoA in PDF format (or simply in L^{A}T$_E$Xr format for further fancy style modification).

References

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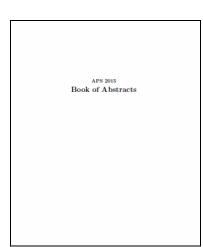

Figure 1. Illustration of BoA produced by `mkboa.sh` shell script: page title (left), table of contents (center), and an abstract page (right).

Appendix A. mkboa.sh

```
#
# mkboa.sh
# Make Book of Abstract (BoA) from draft produced by
# SeminarPress
#
# Author(s):
#   Sparisoma Viridi | dudung@fi.itb.ac.id
#   Agus Suroso | agussuroso@fi.itb.ac.id
#   Fiki Taufik Akbar | ftakbar@fi.itb.ac.id
#
# Note:
#   Change permission of this script using
#   chmod 755 mkboa.sh
#
# History:
#   [20150711]
#   Start this script after long discussion in APS 2015
#   WA group.
#   Implement array for field categories and poblem when
#   try to obtain title since it contains whitespaces.
#   [20150712]
#   Still try to overcome title problem due to existence
#   of the whitespaces.
#   Template for BoA and participants letter are preparing
#   separately. All will be merged in the next day.
#   Manual removing:
#   BIO-2
#     L41: '.'
#   COM-11:
#     L516: 'Abstract.'
#   THE-28:
#     L5401: The phrase 'Abstract.'.
#   COM-16:
#     L608: Part of Indonesian title,
#     L616: '' (empty line)
#     L617: 'Abstrak'
#     L618: Indonesian abstrak
#     L619-626: ''
#     L627: 'Abstract' (manually added by author)
#   INS-03
#     L1855: 'Abstract.'
#   INS-04:
#     L1876-L1877: ''
#   MAT-08
#     L2477: 'Abstract.'
#   MAT-49
```

```
#     L3414: 'Abstract.'
#   EDU-26
#     L4596: 'Abstract.'
#   EDU-28
#     L4639: 'Abstract.'
#   In order to avoid pattern inconsistencies, previous
#   possible bugs should be prevented in SeminarPress
#   rather fixed using this scipt, while it would be
#   easier.
#   Table of content can be generated by manually add
#   content, while format is also manuallya modified
#   Paper size is B5 with font size 10pt.
#   Some authors use wrong latex notation
#   Correct some items using _ and ^ since they are used
#   in latex equation.
#   SeminarPress should prevent author from using latex
#   special characters: #, %, &, ..
#   Also: K\{a}hler --> K\"ahler
#

# Script name
sname="mkboa.sh"

# Number of arguments
argc=$#

# Show usage and terminate script
if [ $argc -eq 0 ]
then
      echo "Usage: $sname [src dest]"
      echo -e "src\tsource for BoA e.g. abs.book.txt"
      echo -e "dest\tdestination for BoA e.g. abs.book.tex"
      exit
fi

# Get value of src and dest
src=$1
dest=$2
echo "Read from $src and write to $dest"

# Declare field categories
declare -a fcat=(BIO COM EPS INS IDP MAT NUC EDU THE)
ncat=${#fcat[@]}

# Calculate number of abstracts
nabs=0
for((icat=0; icat<$ncat; icat++))
do
      # Define field categories in form of XXX-
      prfcat="${fcat[$icat]}-"
      # Get lines and turn it to array
```

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```
        line=($(cat $src | grep $prfcat))
        # Calculate number of array components
        abs=${#line[@]}
        # Calculate total number of abstracts
        nabs=$(expr $nabs + $abs)
        # Note number of abstracts in each category
        fcatn[$icat]=$abs;
done
# Show total number of abstracts and in each category
echo "Number of abstracts = $nabs"
# Show field categories in a line
echo -n "   "
for((icat=0; icat<$ncat; icat++))
do
        echo -ne "${fcat[$icat]}\t"
done
echo
# Show number of items in each category in a line
echo -n "   "
for((icat=0; icat<$ncat; icat++))
do
        echo -ne "${fcatn[$icat]}\t"
done
echo

# Get all titles, authors, abstracts, and keywords
t=0
for((icat=0; icat<$ncat; icat++))
do
        N=${fcatn[$icat]}
        field=${fcat[$icat]}
        for((n=0; n<$N; n++))
        do
                # Define search string
                prfcat="${fcat[$icat]}-"
                m=$(expr $n + 1)
                # Generate code
                nn=$(printf "%02i" $m)
                codes[t]=$field-$nn
                # Get title at line 2
                line=$(cat $src | grep -m $m -A 2 $prfcat| tail -n 1)
                title="'"$(echo $line | sed 's/.$//')"'"
                titles[t]=$title
                # Get author(s) at line 4
                line=$(cat $src | grep -m $m -A 4 $prfcat| tail -n 1)
                author="'"$(echo $line | sed 's/.$//')"'"
                authors[t]=$author
                # Get last line containing keywords
                keys="Keywords:"
                line=$(cat $src | grep -m $m -A 32 $prfcat \
                | grep -m $m $keys | tail -n 1)
```

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```
            #echo $line
            keywords="'"$(echo $line | sed 's/.$//')"'"
            keywordss[t]=$keywords
            # Get last line containing abstract
            abst="Abstract"
            line=$(cat $src | grep -m $m -A 32 $prfcat \
            | grep -m $m -A 2 $abst | tail -n 1)
            #echo $line
            abstract="'"$(echo $line | sed 's/.$//')"'"
            abstracts[t]=$abstract
            # Show progress line
            echo -ne "Reading item #$t\r"
            t=$(expr $t + 1)
        done
done
echo "$nabs items read        "

# Write BoA using \LaTeX
echo "\\documentclass[b5paper]{article}" > $dest
echo "\\begin{document}" >> $dest
echo "\\title{\\bf {\\large APS 2015} \\\\ \
{\\LARGE Book of Abstracts}}" >> $dest
echo "%\\author{Alls}" >> $dest
echo "\\date{}" >> $dest
echo >> $dest
echo "\\maketitle" >> $dest
echo "\\newpage" >> $dest
echo >> $dest
echo "\\tableofcontents" >> $dest
echo "\\newpage" >> $dest
# Generate pages
for((it=0; it<$t; it++))
do
        # Add blank line for clarity in tex file
        echo >> $dest
        # Remove apostrophe at the beginning and the end
        title=$(echo ${titles[$it]} | sed "s/'//g")
        # Removing some latex special characters
        title=$(echo $title | sed 's/#/\\#/g')
        title=$(echo $title | sed 's/%/\\%/g')
        code=${codes[$it]}
        author=$(echo ${authors[$it]} | sed "s/'//g")
        # Removing some latex special characters
        author=$(echo $author | sed 's/#/*/g')
        author=$(echo $author | sed 's/&/\\&/g')
        abstract=$(echo ${abstracts[$it]} | sed "s/'//g")
        # Removing some latex special characters
        abstract=$(echo $abstract | sed 's/%/\\%/g')
        abstract=$(echo $abstract | sed 's/#/\\#/g')
        abstract=$(echo $abstract | sed 's/&/\\&/g')
        keywords=$(echo ${keywordss[$it]} | sed "s/'//g")
```

```
      # Create section
      echo "\\section*{\centering {\\normalsize " \
      $code"} \\\\ " \
      "{\\large "$title"}}" >> $dest
      echo "\\addcontentsline{toc}{section}{\\normalfont " \
      $code $title" \protect\numberline{}}" >> $dest
      echo "\\begin{center}" >> $dest
      echo ${author} >> $dest
      echo "\\end{center}" >> $dest
      echo ${abstract}"\\newline" >> $dest
      echo "\\newline" >> $dest
      echo ${keywords} >> $dest
      echo "\\newpage" >> $dest
      echo >> $dest
      # Show progress line
      echo -ne "Writing item #$it\r"
done

echo "\\end{document}" >> $dest
echo "$nabs items written       "

# Call latex twice to build TOC
latex $dest
latex $dest
# Convert to PDF
dvi=$(echo $dest | awk -F '.' '{print $1}').dvi
dvipdf $dvi
echo "$dvi file is created"
```

Execute the script for BoA draft, e.g. abs.book.txt,

```
    $ ./mkboa abs.book.txt boa.tex
```

will produce boa.tex, boa.dvi, and boa.pdf.