Quick Introduction to LaTeX

Writing Papers the Right Way

Dulan S. Dias
University of Sri Jayewardenepura

LaTeX is and is not..

What is LaTeX

- A sophisticated document preparing system
- Has:
  - Bibliography support
  - Reference tracking
  - Sophisticed structuring capabilities

What LaTeX is Not

- A WYSIWYG kind of word processor
- Does not:
  - Spell-check your document
  - Provide a graphical interface for editing
  - Give you complete control of formatting

Word vs LaTeX

Word

Using Partially-Ordered Sequential Rules to Generate More Accurate Sequence Prediction

Philippe Fournier-Viger[1], Ted Gueniche[1] and Vincent S. Tseng[2]
[1]Dept. of Computer Science, University of Moncton, Canada
[2] Dept. of Computer Science and Inf.. Engineering, National Cheng Kung University, Taiwan
philippe.fournier-viger@umoncton.ca, ted.gueniche@gmail.com, tsengsm@mail.ncku.edu.tw

Abstract. Predicting the next element(s) of a sequence is a research problem with wide applications such as stock market prediction, consumer product recommendation, and web link recommendation. To address this problem, an effective approach is to mine sequential rules from a set of training sequences to then use these rules to make predictions for new sequences. In this paper, we improve on this approach by proposing to use a new kind of sequential rules named "partially-ordered sequential rules" instead of standard sequential rules. Experiments on large click-stream datasets for webpage recommendation show that using this new type of sequential rules can greatly increase prediction accuracy, while requiring a smaller training set.

Keywords: symbolic sequence prediction, sequential rules, partial order

Latex

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[1] Dept. of Computer Science, University of Moncton, Canada
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philippe.fournier-viger@umoncton.ca, ted.gueniche@gmail.com,
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Abstract. Predicting the next element(s) of a sequence is a research problem with wide applications such as stock market prediction, consumer product recommendation, and web link recommendation. To address this problem, an effective approach is to mine sequential rules from a set of training sequences to then use these rules to make predictions for new sequences. In this paper, we improve on this approach by proposing to use a new kind of sequential rules named partially-ordered sequential rules instead of standard sequential rules. Experiments on large click-stream datasets for webpage recommendation show that using this new type of sequential rules can greatly increase prediction accuracy, while requiring a smaller training set.

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Five Reasons to Use LaTeX

- Professional-looking documents
- Latex is much faster
- Edit images anytime
- Focus on the content
- Consistency throughout your content

Setting up Your Machine to Work with LaTeX

Windows

Step 01: Install MiKTex (miktex.org)

Step 02: Install TeXStudio (texstudio.org)

Alternative

Online LaTeX Editor: Overleaf

Essentials

```
\documentclass[a4paper,12pt]{article}

\begin{document}

A sentence of text.

\end{document}
```

Creating a Title

- Type the following directly after the `\begin{document}` command:

```
\title{My First Document}
\author{My Name}
\date{\today}
\maketitle
```

Sections

- `\section{...}`
- `\subsection{...}`
- `\subsubsection{...}`
- `\paragraph{...}`
- `\subparagraph{...}`

```
\section{Introduction}
This is the introduction.

\section{Methods}

\subsection{Stage 1}
The first part of the methods.

\subsection{Stage 2}
The second part of the methods.

\section{Results}
Here are my results.
```

Labelling

Type \label{sec1} on a new line directly below \subsection{Stage 1}

Type Referring to section \ref{sec1} on page \pageref{sec1} in the Results section.

You can label any of the sectioning commands so they can be referred to in other parts of the document.

Label the section with \label{labelname}.

Then type \ref{labelname} or \pageref{labelname}, when you want to refer to the section or page number of the label.

Table of Contents

- Type the following on a new line below `\maketitle`:

```
\pagenumbering{roman}
\tableofcontents
\newpage
\pagenumbering{arabic}
```

If you use sectioning commands it is very easy to generate a table of contents.

Type \tableofcontents where you want the table of contents to appear in your document — often directly after the title page.

Font Effects

`\textit{words in italics}`	*words in italics*
`\textsl{words slanted}`	*words slanted*
`\textsc{words in smallcaps}`	WORDS IN SMALLCAPS
`\textbf{words in bold}`	**words in bold**
`\texttt{words in teletype}`	`words in teletype`
`\textsf{sans serif words}`	sans serif words
`\textrm{roman words}`	roman words
`\underline{underlined words}`	underlined words

Font Sizes

```
{\tiny tiny words}
{\scriptsize scriptsize words}
{\footnotesize footnotesize words}
{\small small words}
{\normalsize normalsize words}
{\large large words}
{\Large Large words}
{\LARGE LARGE words}
{\huge huge words}
```

{\tiny tiny words}

{\scriptsize scriptsize words}

{\footnotesize footnotesize words}

{\small small words}

{\normalsize normalsize words}

{\large large words}

{\Large Large words}

{\LARGE LARGE words}

{\huge huge words}

Lists

```
\begin{enumerate}
\item First thing
\item Second thing
\begin{itemize}
\item A sub-thing
\item Another sub-thing
\end{itemize}
\item Third thing
\end{enumerate}
```

LATEX supports two types of lists: enumerate produces numbered lists, while itemize is for bulleted lists.

Each list item is defined by \item. Lists can be nested to produce sub-lists.

Comment and Spacing

Comments are created using %. When LATEX encounters a % character while processing a .tex file, it ignores the rest of the line.

Multiple consecutive spaces in LATEX are treated as a single space.

Several empty lines are treated as one empty line.

The main function of an empty line in LATEX is to start a new paragraph.

In general, LATEX ignores blank lines and other empty space in the .tex file.

Two backslashes (\\) can be used to start a new line.

Special Characters

The following symbols are reserved characters which have a special meaning in LaTeX:

```
#   $   %   ^   &   _   {   }   ~   \
```

All of these apart from the backslash \ can be inserted as characters in your document by adding a prefix backslash:

```
\#  \$  \%  \^{} \&  \_  \{  \}  \~{}
```

The backslash character \ can not be entered by adding a prefix backslash, \\, as this is used for line breaking. Use the `\textbackslash` command instead.

Tables

```
\begin{tabular}{|l|l|}
Apples & Green \\
Strawberries & Red \\
Oranges & Orange \\
\end{tabular}
```

Apples	Green
Strawberries	Red
Oranges	Orange

Tables - Exercise

Item	Quantity	Price ($)
Nails	500	0.34
Wooden boards	100	4.00
Bricks	240	11.50

Figures

%Add before /begin{document}

```
\usepackage{graphicx}
```

...

```
\begin{figure}[h]
\centering
\includegraphics[width=1\textwidth]{myimage}
\caption{Here is my image}
\label{image-myimage}
\end{figure}
```

Bibliography

References

[1] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The LaTeX Companion*. Addison-Wesley, Reading, Massachusetts, 1993.

[2] Albert Einstein. *Zur Elektrodynamik bewegter Körper*. (German) [*On the electrodynamics of moving bodies*]. Annalen der Physik, 322(10):891–921, 1905.

[3] Knuth: Computers and Typesetting,
http://www-cs-faculty.stanford.edu/~uno/abcde.html

Bibliography

```
\begin{thebibliography}{9}
\bibitem{latexcompanion}
Michel Goossens, Frank Mittelbach, and Alexander Samarin.
\textit{The \LaTeX\ Companion}.
Addison-Wesley, Reading, Massachusetts, 1993.

\bibitem{einstein}
Albert Einstein.
\textit{Zur Elektrodynamik bewegter K{\"o}rper}. (German)
[\textit{On the electrodynamics of moving bodies}].
Annalen der Physik, 322(10):891–921, 1905.

\bibitem{knuthwebsite}
Knuth: Computers and Typesetting,
\\\texttt{http://www-cs-faculty.stanford.edu/\~{}uno/abcde.html}
\end{thebibliography}
```

Citations

```
\cite{einstein}
```

You can use the \cite{...} command to reference to your bib-items in your content.

Slides with LaTeX with Beamer Class

To start our presentation we need to set the document class to `beamer`.

```
\documentclass{beamer}
```

Next we'll select a theme using the `\usetheme` command; for our example we'll use the `Boadilla` theme.

```
\usetheme{Boadilla}
```

Now to add slides in we use the `frame` environment.

```
\begin{frame}

...

\end{frame}
```