Useful latex specialities

No numbers to sections or sections

If you do not want to output section or section numbers (like in this document) use '*' after the command, e.g. `\subsection*{title}`. This is not recommended in master thesis, but you can maybe need it in some special cases.

Other symbols or item names to lists

If you want to use other symbols that bullets in an itemize list, you can define new symbols or item names in `\item`command like `\item[a]` and `\item[Step1]` . See example:

```
\begin{itemize}
\item[Step 1] $x=x+1$
\item[Step 2] $y=x^2+1$
\item[Step 3] If $y \leg n$ return Step 1.
\end{itemize}
```

outputs

Step 1 $x = x + 1$

Step 2 $y = x^2 + 1$

Step 3 If $y \leq n$ return Step 1.

Footnotes

Footnotes[1] are achieved by command `\footnote{text}`.

[1] These not recommended in computer science texts; use them sparsely!

Font size

Font size can be enlarged or shrunk by special commands

```
 \Huge \LARGE \Large \tiny
  \footnotesize
```

etc. See latex manual! E.g. if your table contains a lot of text, first try to prune the text, but if it doesn't help, you can use footnote size:

```
\begin{center}
\begin{table}[!h]
\caption{plaa-plaa}
\label{tab1:3}
\footnotesize{
\begin{tabular}

\end{tabular}
}
\end{table}
\end{center}
```

Multi-column tables

If you want to get a table, where some columns are divided into subcolumns on some rows but united in others, you can use command `\multicolumn`. This command requires package `multicol`. Include it in the header by command `\usepackage{multicol}`.

See the following example:

```
\begin{table}[!h]
\begin{center}
\caption{Comparison of prediction accuracy of {\em LR} and {\em NB} models.
The prediction accuracy is expressed
true positive $TP$ and  true negative $TN$ rates.
All models have been evaluated by 10-fold cross-validation and the
classification rates have been averaged.}
\label{crossval}
\begin{tabular}{|l|c|c|c|c|}
\hline
Model structure&\multicolumn{2}{|l|}{$LR$ rates} &
```

Table 1: Comparison of prediction accuracy of LR and NB models. The prediction accuracy is expressed true positive TP and true negative TN rates. All models have been evaluated by 10-fold cross-validation and the classification rates have been averaged.

Model structure	LR rates		NB rates	
	TP	TN	TP	TN
$A \Rightarrow FR1$	0.83	0.47	0.96	0.31
$A, B \Rightarrow FR1$	0.91	0.72	0.80	0.81
$A, B, C \Rightarrow FR1$	0.93	0.81	0.83	0.81
$TP1 \Rightarrow FR2$	0.70	0.68	0.96	0.53
$TP1, D \Rightarrow FR2$	0.78	0.84	0.76	0.61
$TP1, D, E \Rightarrow FR2$	0.76	0.89	0.82	0.87
$TP1, D, E, F \Rightarrow FR2$	0.70	0.92	0.80	0.87

```
\multicolumn{2}{|l|}{$NB$ rates}\\
& TP& TN& TP&TN\\
\hline
$A \Rightarrow FR1$ &0.83&0.47&0.96&0.31\\
\hline
$A,B \Rightarrow FR1$ &0.91&0.72&0.80&0.81\\
\hline
$A,B,C \Rightarrow FR1$ &0.93&0.81&0.83&0.81\\
\hline
$TP1 \Rightarrow FR2 $&0.70&0.68&0.96&0.53\\
\hline
$TP1,D \Rightarrow FR2 $&0.78&0.84&0.76&0.61\\
\hline
$TP1,D,E \Rightarrow FR2$&0.76&0.89&0.82&0.87\\
\hline
$TP1,D,E,F \Rightarrow FR2$&0.70&0.92&0.80&0.87\\
\hline
\end{tabular}
\end{center}
\end{table}
```

Notice that you have to define the maximum number of columns in the tabular definition, and multicolumn is used to combine columns on some rows.

Sideway tables

If the table is very large, using footnote size doesn't help enough. In this case, you can allign the table horizontally by commands `\begin{sidewaystable}`and `\end{sidewaystable}` instead of `\begin{table}`and `\end{table}`. These commands demand that you include package `rotating`. Add to the header line `\usepackage{rotating}`.

```
\begin{sidewaystable}
\begin{center}
\caption{Table caption}
\label{predmodels}
\footnotesize{
\begin{tabular}{|l|l|l|l|l|l|}

\end{tabular}
}
\end{center}
\end{sidewaystable}
```

Special letters

In foreign names, you need sometimes special letters. E.g. Scandinavian letters ä and ö are achieved by `{\"a}` and `{\"o}`; á by `{\'a}` and à by `{\‘a}`.

Removing extra spaces

After a full stop, latex writes always a longer space, because it interpretes it as an end of sentence. However, if you need full stops inside a sentence, e.g. in an abbreviation, this is not desirable. It is recommended that after each such pseudo-full stop you define the space explicitely by a slash \(and drop the space from text):

```
E.g.\ tigers, lynxes, and lions are cat animals.
```

In the article (and master thesis) template the default is that all paragraphs begin by space. This is unconvienent when you just want to leave empty lines without beginning new paragraphs. You can get rid of the beginning space by command `\noindent`.

For example:

```
''The associated probabilities are

\noindent
$a \rightarrow action1$ $(0.6)$ $a \rightarrow action2$ $(0.4)$\\
$b \rightarrow action3$ $(0.6)$ $b \rightarrow action2$ $(0.4)$\\
$c \rightarrow action3$ $(0.6)$ $c \rightarrow action2$ $(0.4)$''\\
```

outputs

"The associated probabilities are
$a \rightarrow action1$ (0.6) $a \rightarrow action2$ (0.4)
$b \rightarrow action3$ (0.6) $b \rightarrow action2$ (0.4)
$c \rightarrow action3$ (0.6) $c \rightarrow action2$ (0.4)"

Adding extra spaces

The latex doesn't consider how many spaces you have written in the text file – it outputs always just one space. To get assitional spaces, you have to define them explicitely by c̃haracter.

If you need more space (either horizontal or vertical) you can define it by commands `\vspace{2cm}`(vertical space of 2 cm) and `\hspace{13mm}` (a horizontal space of 13mm).

Some mathematical symbols

Here is a list of useful mathematical symbols. Remember to use them in the math mode! You can find more symbols in the latex manual.

$\mathbb{R}$	`\mathbb{R}`
$\mathcal{P}$	`\mathcal{P}`
$\emptyset$	`\emptyset`
∞	`\infty`
$\overline{x}$	`\overline{x}`
$\binom{n}{k}$	n `\atopk`
$\ldots$	`\ldots`
$\vdots$	`\vdots`

For example, $\binom{n}{k}$ is achieved by

```
$\left( n \atop k \right)$
```