PROSPER: LaTeX-based computer presentations

In many branches of science and engineering, presentation software, usually Microsoft's Powerpoint, has become a popular tool for the delivery of research talks. Increasingly, such software is also being used in teaching. If used properly, presentation software combines the advantages of traditional 'chalk & talk'–based teaching (arguments can be developed step-by-step; sections of text can be erased while others are kept 'on the blackboard') with the benefits of computer-generated OHP slides, ensuring an attractive appearance regardless of one's handwriting. It also adds the ability to incorporate computer-generated graphics and animations.

Recently, Frédéric Goulard has developed a new document class that allows the creation of computer-based presentations in LaTeX: PROSPER, based on the `seminar` class, originally written by Timothy Van Zandt. The class, documentation and many examples may be downloaded from the prosper home page `http://prosper.sourceforge.net`. A number of style files are provided, defining generic templates for each slide: e.g. colours, fonts, logos, etc., which can easily be modified to suit individual needs.

After processing the LaTeX source, the dvi file may be used to generate two different output formats: *Portable Document Format* (PDF) for displaying the slides on-screen; or *Postscript* for printing backup transparencies. Postscript files are produced in the normal manner using `dvips` and the PDF files are, in fact, derived from the Postscript using `ps2pdf`, available with recent GhostScript distributions. PROSPER does not yet support `pdflatex`, so direct conversion to PDF from the source is not possible.

PDF is a highly portable format and may be displayed on a wide variety of hardware platforms with the Acrobat®reader (available for free download from `http://www.adobe.com/products/acrobat`). Acroread includes a full-screen mode for presentations <Ctrl l> and supports a number of different transition effects between slides (replace, dissolve, glitter,...) that may be defined in the LaTeX source.

A key feature of the prosper class is the use of overlays to control the appearance of certain sections of text on the screen, illustrated in the following example:

```
\overlays{3}{
\begin{slide}{Title of the slide}
This text is visible throughout.
\untilSlide{2}{This text appears until slide two.}
\fromSlide{2}{This text appears from slide two.}
\onlySlide{3}{This text only appears on slide three.}
\end{slide}}
```

In the above, the text specified in the arguments remains displayed at its original position even if the space 'above' it becomes available subsequently. The starred versions of the three commands (e.g. `\fromSlide*{n}{}`) reformats the page to fill any gaps that appear when material is removed and should be used for replacement purposes.

External graphics may be included with standard LaTeX packages such as `epsfig` and `graphics`; and the `pstricks` package can be used to produce lively annotations and effects, see the file `prosper-tour.tex` included in the distribution. The PROSPER class includes the `hyperref.sty` package by Sebastian Rahtz, which may be used to define internal and external hyperlinks within the document. In particular, hyperlinks to external animations may be created via the command

```
\href{run:WonderfulAnimation.avi}{Start animation}
```

The hyperlink "Start animation" spawns a multimedia player, defined by Acroread, that displays the movie WonderfulAnimation.avi in a new window. In this example, WonderfulAnimation.avi must be in the same directory as the pdf file, although, of course, relative file names may be specified. Direct links to Acroread menu options may also be created e. g.

```
\Acrobatmenu{NextPage}{Next} \Acrobatmenu{PrevPage}{Prev}
```

defining two hyperlinks, Next and Prev, to the next and previous pages, respectively. Including such links in the generic style file allows the use of wireless mice to control presentations.

Two examples, illustrating the on-screen manipulation of fairly complex equations and the use of associated graphics can be found at
`http://www.maths.man.ac.uk/~mheil/Prosper`.

When we first used PROSPER, we were amazed how easy it was to convert existing LaTeX-generated slides into electronic presentations. We have now used PROSPER for many research presentations and occasionally for teaching. The following points might be useful for newcomers to computer-based presentations:

- LCD projectors are now widely available at conferences and incompatibilities between laptops and the projectors tend to be rare(r). Nevertheless, we still prepare 'backup' OHP slides in case of any hardware problems.

- One drawback of any computer-based presentation is that it is impossible to see the next slide before it appears on the screen. To ensure a smooth talk, it is vital to remember the sequence of one's slides well. We (and a few other speakers whose talks we have attended) have occasionally been surprised by the appearance of an 'unexpected' slide.

- Many speakers use Post-It notes to attach brief notes to their OHP transparencies. We tend to use the `\onlyslide{}` command to briefly display any such notes (in a smaller fontsize) on the screen.

- It is very easy to customise the style files to include logos, frames and colourful backgrounds. However, it is important to remember that graphics can be distracting and that some backgrounds strongly reduce the readability of the text. For maximum contrast, we prefer black text on a white background and tend to use colour only to highlight important sections of the text and the equations.

To summarise, we feel that Frédéric Goulard has created an extremely useful tool which we expect to be become very popular within the mathematical community.

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