

Interactive Teaching Materials in PDF using JavaScript

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Abstract

The use of JavaScript scripting language for adding interactivity to portable teaching materials of a high typographical quality in PDF file format is described. An extended version of the program $\text{T}_{\text{E}}\text{X}$ called pdf $\text{T}_{\text{E}}\text{X}$ is extremely useful for such purposes. It is shown that applications similar to those done by a CGI scripting on the web can be done in PDF, exploiting Acrobat forms and the embedded JavaScript engine implementation in Acrobat Reader or other PDF viewers.



An Outline

- ① Motivation: Teaching Materials needed
- ② Textbook Mathematical Analysis with Program MAPLE
- ③ Formats for Electronic Delivery
- ④ PDF
- ⑤ T_EXnicalities
- ⑥ Summary and Future Work



Motivation: Teaching Materials for a Course Needed

- ➔ Different students, different transport media (paper, braille, electronic digital format), different teaching materials.



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- ➡ A picture is worth 1000 words, an animation is worth even more (not only when showing series convergence).



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☞ The same data and multiple formats of delivery: paper and screen designs.



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- Both textbook versions generated from *one* \LaTeX source (with logical markup) with almost the same texts, but totally different design.



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- HTML, MATHML support in Internet browsers is not yet mature, low quality of typography and mathematics “typesetting”.



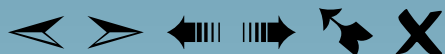
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- T_EX macros to automatize the generation process, including *document level JavaScript*.



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- ☞ The possible other usage of the method are possible: autotesting, multiple choice evaluation, multiple outputs (Braille, XML, . . .), calculator :-).

