Electronic Publishing and Document Processing Advanced Topics in Computer Science(CS 236605) Home Page

Spring 1997 Course Outline/Syllabus

LECTURES: Wednesdays 14:30-16:20 Fishbach 507 (Main Multimedia Room)
RECITATIONS: Wednesdays 16:30-17:20 Fishbach 507 (Main Multimedia Room)

Prof. Daniel M. Berry
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Room: Fishbach 479
Office hours: Tuesdays 12:30-14:20
Telephone number: NONE (Does not use telephone)

General Information

In this advanced topics course, the professor will lecture about a few topics and then each student will either prepare a lecture, a written report, or a project in the area.

As such, this course is run as a seminar and can be used to get seminar credit. Please approach the professor for signatures on petitions to this effect.

The course deals with any issues related to processing, editing, formatting, distributing, and printing human-created documents.

Topics that may be covered include:

1. Formatting
    1. Batch Formatters
        1. troff
        2. TeX
        3. LaTeX
    2. WYSIWYG formatters, e.g.,
        1. Word
        2. FrameMaker
        3. PageMaker
    3. WYSIWYG vs. batch -- user and software engineering issues
    4. Formal Semantics of troff, environments, diversions, binding time
    5. Formal properties that troff prepasses must satisfy
    6. Extensible object-oriented WYSIWYG
    7. WYSIWYG troff

8. ODA
9. SGML
10. HTML
11. imperative vs. mark-up
12. monlithic vs. piped
13. page layout and paragraphing problems and algorithms
14. special purpose processors
15. picture drawing systems
    1. batch
        1. pic
        2. ideal
        3. PostScript
        4. MetaPost
    2. WYSIWYG
        1. Xfig
        2. Adobe Illustrator
        3. Intellidraw
        4. Picasso
        5. WD-pic
16. formatting Pet Peeves (or things that cause me to cringe when I see them!)

2. Fonts
    1. Old-fashioned
    2. Bitmap vs. Outline
    3. Font definition languages
        1. METAFONT
        2. PostScript
            1. Type 3
            2. Type 1
            3. Hinting
            4. Adobe Type Manager
            5. Multi-Master Fonts
            6. Acrobat-Portable Document Format
        3. TrueType
    4. Dynamic fonts
        1. Dynamic fonts to implement stretching in Arabic and Hebrew
        2. Dynamic fonts to more general ligaturing in Arabic
    5. Fonts and Devices
        1. Rasterization problems
        2. Aliasing and Antialiasing
        3. Halftoning
        4. Dithering
3. Multi-lingual Issues
    1. Multi-character sets
        1. Xerox Character Code Standard
        2. UUC (Universal Unix Code)
        3. Unicode
    2. Multi-directional
    3. Localization issues

    4. ditroff/ffortid
    5. triroff
    6. vi.iv
    7. MINIX.XINIM
    8. Multi-lingual windows and mice
    9. Requirements for Arabic vi.iv
    10. Requirements for Bi-directional X and mouse
    11. Requirements for Tri-Directional vi
4. Structured Documents
    1. Mark-up
    2. Hypertext
    3. Integrated authoring systems
    4. Document reuse
    5. OLE
5. Hypertext
    1. History
    2. WWW
    3. HTML
    4. Hypercard
    5. CAJUN
6. Multimedia
    1. Text
    2. Audio
    3. Images
    4. Animation Systems
    5. Video
    6. Hypermedia
    7. Multimedia Studio Tools
7. Implementations
    1. Debugging of \N in troff
    2. Building of version of mX for pm
    3. New paragraphing-line-justification for troff-pm
    4. Useful ditroff and TeX preprocessors
    5. Implementation of Dynamic Ligaturing in Arabic Fonts
    6. Work out interface of troff to Dynamic Ligaturing Arabic font
    7. Add Hindi to troff
    8. Adding Korean or Taiwan Chinese to troff
    9. Adding Amharic to troff
    10. Building Amharic PostScript font (if there are none available commercially)
    11. Working out interface of 8th-bit clean troff to new Adobe outline fonts for Japanese
    12. Install music and enhance to make use of Sonata font
    13. Enhancements to Interchangeable WYSIWYG-batch pic
    14. Enhancements to Troff to HTML translator
    15. Building personal handwriting font

Course Requirements

The instructor will give some of the lectures.

The student will be expected either

1. to choose a topic, research it thoroughly in the literature, and prepare a talk or
2. mini-programming project, do it, and document the results.

Source materials will be published papers, plus articles in EP conference proceedings and the journal *Electronic Publishing*.

Your ideas??

Please get my approval first for your topic, whether my or your idea. Some of the above are too big and need to be scoped. Also, I do not want two people lecturing on the same subject.

Schedule

There are not enough class slots to accommodate everyone who wants to talk while allowing people time to prepare. Therefore there will be talks scheduled for Sunday afternoons at 16:00-19:00, i.e., mid-term exam times, in order to allow everyone who wants to talk an opportunity. Also, note that we have a recitation section each Wednesday right after the regular lecture that we can use to schedule people to give talks. You are not required to attend any of these extra sessions except the one in which you are giving your presentation. I hope though, that these topics generate enough interest that people other than I will be in the audience. Tell your friends to come to cheer you on. I will publicize these talks in the department. Initially, we meet only on Wednesdays for two hours as I give some lectures on various topics of general interest and on my own work.

Date	Sun.	Topic; Speaker	Wed.	Topic; Speaker
March	2	Before first class		
			5	Administrative & Troff Overview; Berry
	9			
			12	Multilingual Troff; Berry
	16			
			19	Formatting of Arabic in Troff; Berry
	23			
			26	Non-computer Typography; Berry
	30			
April			2	Fonts; Berry
	6			
			9	
	13	Conference--NO CLASS	16	Conference--NO CLASS
	20	Passover--NO CLASS	23	Passover--NO CLASS
	27	Passover--NO CLASS		

			30	
May	4			
			7	
	11			
			14	
	18	Conference--NO CLASS	21	Conference--NO CLASS
	25			
			28	
June	1			
			4	
	8			
			11	Shavuot--NO CLASS
	15			
			18	
	22			
			25	

When possible, the slides for my lectures will be available via anonymous ftp from csgo.cs.technion.ac.il. Login with user ‘‘anonymous’’ and send your login@site as the password. The material for this class is in the directory:

`/pub/courses/electronic.pub`

You will find there PostScript files (all file names ending with `.ps`). For example, this outline is there as `outline.ps`. The file names should be obvious. At the suggestion of a student in the Fall of 1994, I am making the notes available this way. You can ftp them and print them at your own expense. Evidently, this is cheaper than paying Michlol for a hard copy. You will aslo find the same material in PDF form (all file names ending with `.pdf`), readable by the Adobe Acrobat Reader, which is available for free by anonymous ftp from ftp.adobe.com.

To get the files, after connecting, `cd` to the directory mentioned above. If you getting PDF files, say ‘‘`binary`’’. PostScript files must be gotten in ASCII mode unless you happen also to be at a UNIX machine. To get any particular file *f* say ‘‘`get` *f*’’. Don’t forget to disconnect by saying ‘‘`quit`’’. If *f* is of the form *g*`.ps`, then the result is a PostScript file. This can be printed by use of ‘‘`lpr` *g*`.ps`’’ or it can be previewed on your screen with ghostscript, which is described below. If *f* is of the form *g*`.pdf`, then the result is a PDF file, viewable and printable with an Acrobat Reader.

GhostScript is called `gs` on most UNIX systems and it assumes that you are running an X-windows. There is a PC version of Ghostscript that comes in two different flavors, one for DOS and one for WINDOWS. The advantage of the WINDOWS version is that you can type commands to it in one window, a DOS shell window, and you will see the results in another, ghostscript graphics window. In the DOS version, both the commands and the results are written to the same, and only screen. You can find the PC version of Ghostscript in `x:\software\ghost` in the file server for the PC farm. Since the program is public domain, you are welcome to copy the stuff there in order to install it on any other PC you have access to.

These course materials are also available through the course Web page, whose URL is:

`http://www.cs.technion.ac.il/~csep`

There is some material that is so old or is from sources for which making an electronic copy is inconvenient. For these, I have put 5 hard copies in the course's notebook at the EE-CS library. You can borrow these to make your own copy.

You are expected to prepare *your* lecture slides using some electronic publication medium and to prepare both a PostScript and an orignal file from the medium of the slides. Please get them to me by e-mail or diskette and I will install it on the web page and at the anonymous ftp site. In the case that your lecture is about a medium in which you can prepare slides, e.g., a formatter, etc.., then I expect you to *use* that medium to prepare the slides.
