

**CS846**

**Advanced Topics in  
Electronic Publishing**

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# Purpose or Goal of Seminar

**This seminar surveys the latest work in the Electronic Publishing (EP), and the Digital Typography (DT) areas.**

**Along the way, we will learn some of the basics.**

# Probable/Possible Outline

- **Typography**
  - **Traditional**
  - **Digital**
- **Fonts**
- **Formatters**
- **Editors**
- **Internationalization (I18n)**
- **Your topics**

# Requirements

**Interest in the subject**

**Plus one of:**

- **do research on an EP topic**
- **do an EP project**

**Plus writing a conference-sized paper about the research or project**

**Plus giving a lecture about the paper**

# More Detail

**I will now flesh out the outlines of some of the topics mentioned above.**

# Typography

- **Traditional — metal type, ink, paper, presses, etc.:**

**Tradition is based on centuries of experience with what is physically possible and what looks good.**

- **Digital**

**At first, just imitates traditional, but later, began to push the envelope to good looking effects that were not physically possible.**

# The Rest of the Topics

**Most of the rest of the topics are in the service of typography.**

# Fonts

- **Bitmap vs. outline**
- **Font definition languages**
- **Dynamic fonts**
- **Dynamic fonts to implement stretching in Arabic, Persian, Urdu, and Hebrew**



# Font Definition Languages

- METAFONT
- **POSTSCRIPT**
- **TrueType**

# POSTSCRIPT

- **Type 3**
- **Type 1**
- **Hinting**
- **Adobe Type Manager (ATM)**
- **Multi-Master Fonts (MMF)**
- **Portable Document Format (PDF)**
- **Acrobat**

# Formatters

- **Batch**
  - **troff**
    - **T<sub>E</sub>X**
- **WYSIWYG/Direct-Manipulation**
  - **Word**
  - **FrameMaker**
- **Formatting issues**
- **WYSIWYG vs. batch**
- **Formatting Pet Peeves (or things that cause me to cringe when I see them!)**

# Formatting Issues

- **Justification vs. raggedness**
- **Line breaking**
- **Page layout problems and algorithms**
- **Imperative vs. mark-up**
- **Monolithic vs. piped**
- **Special purpose processors**

# WYSIWYG vs. batch

- **User interface and software engineering issues**
- **Extensible object-oriented WYSIWYG**
- **Interchangeable WYSIWYG-batch pic**

# I18n Issues

- **Multi-character sets—Unicode**
- **Multidirectional**
- **Localization issues**
- **ditroff/ffortid**
- **triroff**
- **vi.iv**
- **MINIX.XINIM**
- **Multilingual windows and mice**

# Division of Work

**Instructor will give some lectures.**

**The student will be expected either**

- 1. to choose a topic, research it thoroughly in the literature, and prepare a paper or**
- 2. to choose a programming or specification project, do it, and prepare a paper.**

**Then he or she will be expected to give a 30-minute talk based on the paper ...**

# Division of Work, Cont'd

**so that the whole class benefits from it, ...**

**and the prof has one fewer lecture to do. 😊**

**The paper is conference sized, i.e., *about* 10 pages in 2-column IEEE conference template, ...**

**but you can use your own template.**



# Source Materials

**Source materials will be published papers, plus articles in EP conference proceedings and journals.**

# Possible Topics

**Many of the topics above are available; that is, you do the lecture instead of me.**

# Possible Topics, Cont'd

**Also possible are:**

- **batch formatters other than troff**
- **WYSIWYG formatters other than Word**
- **page layout**
- **T<sub>E</sub>X paragraphing (line-breaking) algorithm**
- **Multilingual, Multidirectional T<sub>E</sub>X**
- **T<sub>E</sub>X with unicode characters**

# Topics Cont'd

- **Chinese/Japanese/ Korean (CJK) Typesetting**
- **Arabic/Persian/Urdu (APU) Typesetting**

# Projects

- **A new way to fake smallcaps with smaller sized caps**
- **Dynamic fonts to more general ligaturing in Arabic**
- **Dynamic fonts to implement handwriting**
- **Infinitely saleable, highly realistic personal graphic signature in PostScript**
- **Nastaliq and other slanted Arabic, Persian, and Urdu Calligraphy**
- **Fully Unicode-enabled vim**

# Projects, Cont'd

- **Alternate Unicode with only strong characters, i.e. one version of each neutral character in each direction and explicit embedding in place of weak characters**
- **Porting vi.iv to Linux**
- **Adding Arabic, Persian, or Urdu to vi.iv**
- **Requirements for surprise-free Bi-directional windowing and mouse**
- **Requirements for Tri-directional vi**
- **Improved TextEdit for Mac OS/X**
- **Porting ditroff to Mac OS/X**