

# CSc 461/561

## Multimedia Systems

### Introduction

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1/4/06

CSc 461/561

1

## About the course

- <http://www.csc.uvic.ca/~csc561>
  - schedule: TWF 12:30-1:30pm, CLE A304
- Lecture Instructor
  - Jianping Pan, [pan@uvic.ca](mailto:pan@uvic.ca), x7226
  - office hours: TWF 11:30am-12:30pm, EOW 323
- Lab Instructor
  - Steven Shelford, [sshelford@cs.uvic.ca](mailto:sshelford@cs.uvic.ca)
  - Lab starts this week! (Thu/Fri ELW A207)

1/4/06

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2

## Course materials

- Required textbook
  - none
- Reference textbooks (reserved at UVic Lib)
  - Fundamentals of Multimedia, by Ze-Nian Li and Marks S. Drew, Prentice-Hall 2004
  - Multimedia: Computing, Communications and Applications, by Ralf Steinmetz and Klara Nahrstedt, Prentice-Hall 1995

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3

## About multimedia

- Multimedia: it's more than one medium
  - text, images, graphics, animation, audio, video
  - and many more...
- Why multimedia
  - humans interact *much* better in multimedia
- Why need to know multimedia
  - multimedia is the future of communication
  - e.g.: pager, cellular phone, camera phone, etc

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4

## About multimedia systems

- Systems that handle multimedia content
  - represent (production, reproduction, etc)
  - manipulate (compression, transformation, etc)
  - deliver (storage, transmission, etc)
- Networked multimedia systems
  - involve: mathematics, signal processing, computing, communications, networking, hardware, software, services, applications

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5

## Course objectives

- To understand the fundamental issues and problems in the representation, manipulation and delivery of multimedia content such as images, audio and video, particularly in a networked environment
- First multimedia course with a *systems* perspective for Computer Science students

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6

## Topics: mm representation

- Multimedia information is multidimensional
  - “read through the paper, see the whole picture, remember the last scene, ...”
- Computer data are mostly one-dimension
  - 010010001...
  - how computers *represent* multimedia
- Selected topics
  - digital sound/audio, image/graphics, video

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7

## Topics: mm manipulation

- A picture is worth a thousand words
  - so is the amount of data
  - some formats are better than others
- There is *redundancy*!
- Selected topics
  - lossless or lossy compression
  - examples in audio, image, video compression

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8

## Topics: mm delivery

- Multimedia data are *difficult* to handle
  - how to store them at one location
  - how to move them across multiple locations
- There are multimedia-specific requirements
  - quality of service (bandwidth, delay, jitter, etc)
  - multimedia synchronization, etc
- Selected topics
  - OS/network support, session management

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9

## Your participation

- Lectures and assignments (5%)
  - bonus questions!
- Lab projects
  - CSc 461 (3 projects, 30%), CSc 561 (2 projects, 20%)
- Exams
  - midterm (25%), final (35%)
- Presentation
  - CSc 461 (10min, 5%), CSc 561 (25min, 15%)

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10

## Your presentation

- CSc 461 (10min, 5%)
  - any multimedia topic of your interest
  - let us know what you think is “cool” and why
- CSc 561 (25min with term paper, 15%)
  - identify your research-oriented topic of interest
  - find out what have been done and to be done
- Present near the end of the term
  - start early and let me know your topics

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11

## Your feedback

- Teaching/learning is interactive
  - two-way communications
- Let me know
  - what you think about lectures, assignments, labs, exams, topics, ...
  - What you want to know or probe further
- You can reach me
  - in class, during office hours, by email/phone

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12

## Course policies

- See official course outline
  - late assignments, mark appeals, etc
  - academic integrity
  - accommodation, etc
- No group assignment/project/presentation
  - responsibility: your submitted work is yours
  - obligation: give credit to references

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13

## This lecture

- An introduction to the course
  - who, when, what
  - course materials
  - course objectives
  - course topics
  - you and the course

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14

## Next lecture

- An overview on multimedia systems
  - audio/image/video representation
  - lossless/lossy compression and examples
  - multimedia communication technologies