Expectations

Computer Science Department
CS4481b/9628b: Image Compression
Winter 2017
Instructor: Mahmoud R. El-Sakka
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Instructor and TA

- ***Instructor***:
  - Professor Mahmoud El-Sakka
    Middlesex College, Room 419
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- ***Graduate Teaching Assistance:***
  - Jason Brasse,
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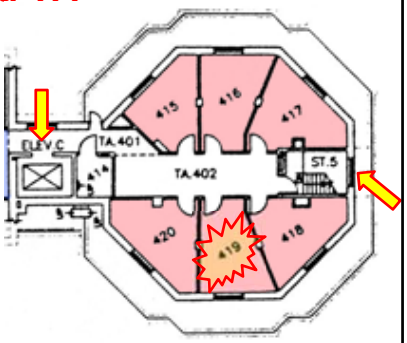


Course schedule

- ***Lectures:***
  - Time: Wednesdays 10:30 - 1:30 PM
  - Place: **MC-320**

  Attendance is important
  - *Guidance is needed to understand the information in the book*

- ***Instructor Office Hours***:
  - Mondays from 12:15 PM to 1:00 PM
  - Thursdays from 12:15 PM to 1:00 PM

- ***TA office hours***:
  - By appointment only

Why am I taking this course?

- The professor who is teaching this course is giving good marks!!!
- To know more about video encoding and MPEG
- To know more about PS and PDF format
- Bought a digital camera/scanner/camcorder and would like to know more about:
  - how to use it
  - how to manipulate their outputs
- ✓ To understand the principles and fundamentals of various digital still-image compression schemes
- ✓ To know how to write a module to read/write GIF/TIFF/JPEG/PBM/BMP images

Course Description

- It is widely believed that *a picture is worth more than a thousand words*. However, dealing with digital pictures (images) requires far more computer memory and transmission time than that needed for plain text.
- To be able to *efficiently* handle the huge amount of data associated with images, compression schemes are needed.
  Image compression is a process intended to yield a compact representation of an image, hence, reducing the image storage/transmission requirements.
- Over the last few decades, many good image compression schemes have been developed. These schemes are currently used in commercial compression products/systems, e.g., JPEG and GIF.
  The performance of these schemes varies from low to high compression ratios with low to high levels of degradation of the decompressed images.
- *This course provides* students with a solid understanding of the principles and fundamentals of various digital still-image compression schemes.
- *Upon completion of the course*, the students will be equipped with the fundamental knowledge that will help them understand various compression techniques in such a way to optimize their use for a particular application.

Topics To Be Covered During The Course

- Digital Image Fundamentals
- Introduction to Image Compression
- Codeword Encoding
- Dictionary-based Encoding
- Predictive Encoding
- Tree-based Encoding
- Quantization
- Transform Encoding
- Continuous-tone Still-image Compression Standard
- Additional topics, if time allows

How much will I learn from this course?

- Depends on how much effort will you put.
  - No pain ➔ no gain

Prerequisites

- CS3307a/b/y (Object-Oriented Design and Analysis)
- Familiarity with C/C++ programming

Students are responsible for ensuring that they have either:

- *prerequisites for this course, or*
- *written special permission from their Dean to enroll in*

Antirequisites

- CS9532a/b (Image Compression)

Textbook

- Introduction to Data Compression, 4th Edition
  By Khalid Sayood
  Elsevier/Morgan Kaufmann, 2012

Course Website

- Lecture notes, assignments, and class information will be posted on the Online Western's Learning (***OWL***) system (***https://owl.uwo.ca***)
- You are responsible for reading this information frequently
- *Possessing (and even reading) lecture notes is not a suitable substitute for attending lectures*

Assignment Conduct

- There will be 4 equal weight assignments:
- Tentative assignments schedule:

Assignment no.	**To be assigned on**	**Back after**	**Due** at **23:55** on
1	Wednesday January 25	15 days	Thursday February 9
2	Wednesday February 8	22 days	Thursday March 2
3	Wednesday March 1	15 days	Thursday March 16
4	Wednesday March 15	15 days	Thursday March 30

- Assignment descriptions will be posted on the course website by the dates listed above
- Any changes, updates, and clarifications to assignments will also be posted on the website
- It is your responsibility to monitor these pages closely

Assignment Conduct

- All assignments will be submitted *electronically*
- Late assignments are ***strongly discouraged***
  - *10% will be deducted from a late assignment (up to 24 hours after the due date/time)*
  - After 24 hours from the due date/time, late assignments will receive a ***zero*** grade

Assignment Conduct

- Every effort will be made to have assignments marked within 3 weeks of the hand-in date, preferably sooner
- When assignment marking has been completed, you will be informed via the course website and/or email

Assignment Conduct

- A request for an assignment mark adjustment must be made within 2 weeks following the first handed-back day
- All assignment marks are considered final after 2 weeks

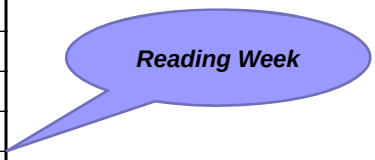
Assignment Conduct

- Assignments are to be done individually
  - ***Never*** let others look at your assignments
  - ***Do not*** ask to look at others' assignments
  - We use automated tools to screen for cheating
- You should read the definition and penalties of scholastic offences at: http://www.csd.uwo.ca/current_students/undergraduate_students/scholastic_offences.html
- Students are expected to adhere to the Rules of Ethical Conduct to use the computing facilities of the Department: http://www.csd.uwo.ca/current_students/undergraduate_students/rules_of_ethical_conduct.html

Quiz Conduct

- There will be 10 equal weight in-class quizzes:
- Tentative quizzes schedule:

Quiz No.	Date
1	Wednesday January 25
2	Wednesday February 1
3	Wednesday February 8
4	Wednesday February 15
5	Wednesday March 1
6	Wednesday March 8
7	Wednesday March 15
8	Wednesday March 22
9	Wednesday March 29
10	Wednesday April 5



In class Seminar/Presentation
(For graduate students only)

- Each graduate student will present an in-class seminar/presentation on an Image Compression related topic.
- Seminar topics must first be discussed with, and approved by, the instructor.

Exam Schedule

- There will be ***NO*** mid-term exam in this course
- There will be ***NO*** final term exam in this course

Student Evaluation

- Grades will be based on
  - *Quizzes*: worth 63%
  - *Assignments*: worth a total of 37% (27% for graduate students)
  - *In-class presentation*: worth 10% (for graduate students only)
- If an assignment has to be canceled for any reason, the remaining assignment weights will be prorated (scaled) to add up to 37% (27% for graduate students)
- *When calculating your assignment grade average,*
  - *best 3 assignments will only be considered*
- If a quiz has to be canceled for any reason, the remaining quizzes weights will be prorated (scaled) to add up to 63%
- *When calculating your quiz grade average,*
  - *best 9 quizzes will only be considered*

Academic Accommodation for Medical Illness

- If you are unable to meet a course requirement due to illness or other serious circumstances, you ***must provide*** valid medical or other supporting documentation to your ***Dean's office*** as soon as possible and contact your instructor immediately
- It is the student's responsibility to make alternative arrangements with their instructor ***once the accommodation has been approved by the Dean's office*** and ***the instructor has been informed***
- In the event of a missed final exam, a "*Recommendation of Special Examination*" form must be obtained from the ***Dean's office*** immediately
- For further information, please see: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf
- A student requiring academic accommodation due to illness should use the *Student Medical Certificate* when visiting an off-campus medical facility **or** request a *Record's Release Form* (located in the ***Dean's office***) for visits to Student Health Services
- The form can be found at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf