This course covers new developments in digital image processing, computer vision, and multimedia. Topics to be covered may include image databases, object tracking, and large-scale data visualization.

This course is a continuation of Cmp Sci 5420 from Fall 2016. We will study the algorithms for wavelets and multiresolution processing, image compression, morphological image processing, and segmentation. In addition, we’ll look at the current research in image processing and computer graphics. Every student will select a project of his/her own choice and get it approved by me. Then, the student will study and implement the project and make a presentation to the class.

Topics

- Wavelets and multiresolution processing
- Image compression
- Morphological image processing
- Image segmentation

Outcomes At the end of this course, you are expected to independently undertake and implement a research-oriented project in image processing successfully. You should understand various image processing tasks and the algorithms required to execute those tasks.

Requirements I’ll expect you to be present in most of the classes. I will not be taking attendance but if you start missing too many classes, please take responsibility for your absence, specially when it concerns tests and homeworks. When you come to class, you must change your cell phones to silent mode. If your phone rings during the test, I’ll deduct 10% points from that test score for you. If you are more than ten minutes late, please try not to disrupt the class. I’ll penalize you by one letter grade for habitually coming late to class (more than five times I notice you coming late or leaving early). Attendance in presentations by other students will be graded.

Grading The grade will be based on programming projects, a test, and a presentation of current research in the field. I’ll expect each of you to select a topic in computer graphics, image processing, computer vision, or multimedia, and present current research on the topic. You should search journals, or recent proceedings from Siggraph, Eurographics, or CVPR conferences and select at least one paper from within the past five years and present the paper in class. I’ll also like to see an implementation of the ideas in the paper as well as a written report. If needed, I may allow two persons to combine their implementation of a topic. The distribution of grades will be as follows:
Test 15%
Paper presentation 10%
Written report 10%
Paper idea implementation 40%
Class projects 20%
Class attendance 5%

The test will be held on April 05, 2017. The deadline for approval of topic for research is February 17, 2017. You can also look at http://scholar.google.com for papers. Anyone desiring an EXC grade after March 31, 2017 must be passing the course at that point to get EXC.

Failure to hand in any assignment will result in an automatic zero for that assignment. If some student is unable to hand in an assignment by the deadline, he/she must discuss it with me before the deadline. I’ll encourage you to talk to other students regarding homework but you should not collaborate to the extent that two submissions are copies of each other. If you are found copying an assignment (from another student or internet), or if your submission has unreasonable similarity to another submission, you get a zero for that assignment automatically. A second offense will be reported to the University officials and students involved will face serious consequences. I may ask you to come to my office and explain your code to me; in case you are not able to explain the code to my satisfaction, I’ll assign you a zero in that project.

The projects in this class will take up a lot of your time. So, you should start working on those as soon as they are assigned. In the past, the students who have asked a lot of questions have scored better grades. Do not hesitate to ask a question in class, in my office, or over email, especially if you do not have an idea on how to start working on the project.

Miscellaneous If you have any disability that requires an accommodation (as per UMSL policy), you must notify me in advance. If you cannot attend the class due to a religious holiday or a university-sanctioned event, please let me know in advance as well. In case you are down with the flu, please stay absent from the class till you recover, and contact me via phone or email. I’ll try my best to make accommodation for you in that case.

You have an account on one of the Unix machines on campus (hoare) and you should use it for all assignments. Any assignment that fails to run on hoare automatically gets a zero. However, you may be able to show me your working code on your laptop for full credit. The lecture notes and old tests are available on the class web page in PDF format. You may want to print the lecture notes before you come to class.

We’ll be using the open source software OpenCV for the class. You can use it on hoare or download and install it on your computer.

Any unsigned email and email not in plain text will go unanswered by me. Please do not send me any attachments without talking to me first.

There is no final exam. In case of class cancellation due to weather-related or other campus emergency, the test will be held in the following class period.

UMSL Course Policies

1. Participation (expectations)
   • It is vitally important that our classroom environment promote the respectful exchange of ideas. This entails being sensitive to the views and beliefs expressed during discussions whether in class or online. Please speak with me before recording any class activity. It is a violation of University of Missouri policy to distribute such recordings without my authorization and the permission of others who are recorded.
• Turn off sound on beepers, cell phones, and other devices during class. Adherence to the Student Conduct Code is expected.

• I am committed to insuring a positive learning environment by respecting that University policy (p. 66): http://www.umsl.edu/~studentplanner/index.html.

• Your success in this course will heavily depend on your ability to communicate, engage and participate in all course activities. Successful completion of this course requires that a student keep up with all assignments, quizzes, projects and tests.

• If you are unable to participate in the scheduled class activities, you must notify the instructor within the week of that class module. An unexcused failure to engage or participate with the class will be counted as an absence; unexcused absences may result in failure. The instructor reserves the right to make judgment to accept and/or makeup assignments missed because of failed participation in the course activities.

2. Academic Integrity/Plagiarism

• Students are responsible for being attentive to and observant of campus policies about academic honesty as stated in the University’s Student Conduct Code (p. 60): http://www.umsl.edu/~studentplanner/index.html

• To avoid accusations of academic dishonesty, please submit all written work to the Turnitin system before finalizing what you submit for evaluation. Check information about The Writing Center @UMSL that is linked to MyGateway Home.

• Plagiarism is the use of another persons words or ideas without crediting that person. Plagiarism and cheating will not be tolerated and may lead to failure on an assignment, in the class, and dismissal from the University. View this campus policy here: http://www.umsl.edu/services/academic/policy/academic-dishonesty.html

3. Mandatory Reporting: Under Title IX, all UMSL faculty, staff, and administrators (with limited exception) are obligated to report any incidents of sexual harassment, sexual misconduct, sexual assault, or gender discrimination to the Student Affairs office and/or other University officials. This ensures that all parties are protected from further abuses and that victim(s) are supported by trained counselors and professionals. Note: There are several offices at UMSL (e.g., Counseling Services, Health Services, Community Psychological Service, Center for Trauma Recovery, and Student Social Services) whose staff are exempt from Title IX mandated reporting, when the information is learned in the course of a confidential communication.

4. Access, Disability and Communication

• Students who have a health condition or disability, which may require accommodations in order to participate effectively in this course, should contact the Disability Access Services Office. Information about your disability is confidential.
  – 144 Millennium Student Center
  – Phone: (314) 516-6554
  – Website: http://www.umsl.edu/services/disabled/

• If you have difficulty communicating in English with the instructor of this course, contact the Office of International Students and Scholar Services:
  – Phone: (314) 516-5229
  – Email: iss@umsl.edu
  – Website: http://www.umsl.edu/~intelstu/index.html
Student Support and Services

- **Technical Support**
  - My Gateway (Blackboard): If you have problems logging into your online course, or an issue within the course site, please contact the **Technology Support Center**:
    - Phone: (314) 516-6034
    - Email: helpdesk@umsl.edu
    - Website: http://www.umsl.edu/technology/tsc/
  - Wimba: If you have any questions regarding Wimba Classroom and Wimba Voice Tools, contact the Faculty Resource Center:
    - Phone: (314) 516-6704
    - Email: frc@umsl.edu
    - Website: http://www.umsl.edu/technology/frc/
    - Outside normal office hours, you may also contact Wimba for 24/7 assistance:
      - Phone: (866) 350-4978
      - Email: technicalsupport@wimba.com

- **Academic Support**
  - **The Online Writing Lab**: At our My Gateway site, students can send their papers to our tutors, who will read them and send them back with suggestions. Students can also access SafeAssign, which identifies quoted material in their essays.
    - Visit the online Writing Lab page on MyGateway to submit drafts online.
    - We try to respond within 48 hours, but it may take longer, so allow ample time.
  - **NetTutor**: Online tutoring in many subjects is now available through NetTutor®. In your courses on MyGateway, click on Tools and select NetTutor® to log in.

- **Student Services**
  - The Student Retention Services office offers assistance tailored to specific student needs.
    - 225 Millennium Student Center
    - Phone: (314) 516-5300
    - Email: umslsrs@umsl.edu
    - Website: http://www.umsl.edu/services/srs/

- **Departmental Tutoring**
  - The department offers tutoring for up to Cmp Sci 3130, and occasionally for other courses
  - Check MyGateway organization CSTutoring.