CSC8860 Seminar on Computer Vision and Pattern Recognition

Course information:

Course #: CSC8860
Course Reference #: 27785
Credits: 3
Day: Tuesday (&Thursday)
Room: 333 State Hall
Hours: 1:30pm – 2:50pm
Web page: http://www.cs.wayne.edu/~mdong/csc8860_schedule.html

Instructor information:

Instructor: Dr. Ming Dong
Office: 5057 Woodward Ave., Suite 14110.1
Office hours: Tuesday 3:00pm-4:00pm or by appointment
Telephone: 313-577-0725
Email: mdong@cs.wayne.edu
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Course Description and Objective:

This course will expose students to some preliminary research activity in the area of pattern recognition & machine learning and their application in computer vision. A list of representative papers is carefully selected from recent publications of premium journals and conferences in the following research areas:

- Supervised Learning (Classification)
- Unsupervised Learning (Clustering)
- Deep Learning (Neural Networks, Convolutional Neural Networks, Deep Belief Networks, Restricted Boltzmann Machines, Recurrent Neural Networks)
- Text Mining and Modeling
- Image Understanding and Feature learning

The objective of the course is to help students learn state-of-the-art pattern recognition and computer vision technologies, gain improved presentation skills, and obtain intensive knowledge and experience on the specific research topic that he or she has chosen for his/her final project.
Prerequisites

- CSC5860 and CSC6860 or with the permission of the instructor.

Required Reading:

Students are required to read all papers (around 20) in the paper list. After choosing his/her final project, students are expected to collect and read another set of papers (around 10) in the corresponding research area.

Organization of the Course:

- **Presentation:**
  Each student will present two or three papers from the list. There will be two student presentations in each meeting. The presentation should be around 30-35 minutes. 5-10 minutes are allocated after each presentation for questions and comments. By Jan 22, the initial presentation schedule (together with papers and slides) will be posted at: [http://www.cs.wayne.edu/~mdong/csc8860_schedule.html](http://www.cs.wayne.edu/~mdong/csc8860_schedule.html)

  Jan 17 (Sunday): If you have papers that you want to present and discuss in class (up to three), please send the full citation and the PDF file to me before Jan 17.

  Please send your presentation slides in PowerPoint format to the instructor one week in advance. The presentation slides will be put on the course website.

- **Discussion:**

  All students are required to download and read the papers and presentation slides in advance before attending the class. Discussion during the presentation is required for every student.

- **Project:**

  Students are expected to work individually on one final project, which will be chosen based on personal interests and a consultation with the instructor. The project selected must be related to pattern recognition, computer vision or machine learning. Students are encouraged to choose a final project that is related to the research work of his/her Ph.d/Master thesis.

  Students should be well motivated and are willing to spend significant time and effort on the final projects. A high quality research paper will be developed for the project.

- **Final Research Paper (due on April 28):** at the end of the semester, each student will submit one research paper of publication-quality and other related materials
such as source codes. Students are encouraged to revise and enhance their paper during the summer and send it to related conferences, e.g., ICIP or ICME.

- The instructor will select the best final project based on the content and quality of the project. This project will have opportunity to be presented in the class during final time.

References:

- IEEE transactions on Pattern Analysis and Machine Intelligence
- IEEE transactions on Image Processing
- IEEE transactions on Multimedia
- IEEE transactions on Neural Networks
- Proc. IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- Proc. IEEE Conference on Computer Vision (ICCV)
- Proc. IEEE International Conference on Image Processing (ICIP)
- Proc. ACM Conference on Multimedia (ACM MM)
- Proc. International Conference on Machine Learning (ICML)
- Pros. ACM Conference on Knowledge Discovery and Data Mining (KDD)

Grading policies:

- Class participation and in-class discussion: 20%

  Class participation and in-class discussion is very important to inspire ideas. The instructor will record the participator of the discussion for each meeting and grades will be assigned accordingly.

- In class presentation: 45%

  Presentation will be evaluated from the following aspects,

  Understanding of the paper
  Quality of the presentation slides
  Clarity of the presentation
  Questions and Comments

- Final project (research paper and presentation/demonstration): 35%

- A: 100 – 90, A-: 89 – 80, B+:79 – 70, B: 69 – 60, B- etc.: 59 – 0.

Computer Usage:

Students could implement their proposed work in any kind of programming languages.

Religious Holidays:
Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

**Student Disabilities Services:**

- If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located in the Adamany Undergraduate Library. The SDS telephone number is 313-577-1851 or 313-202-4216 (Videophone use only). Once your accommodation is in place, someone can meet with you privately to discuss your special needs. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

- Students who are registered with Student Disability Services and who are eligible for alternate testing accommodations such as extended test time and/or a distraction-reduced environment should present the required test permit to the professor at least one week in advance of the exam. Federal law requires that a student registered with SDS is entitled to the reasonable accommodations specified in the student’s accommodation letter, which might include allowing the student to take the final exam on a day different than the rest of the class.

**Policy on Academic Dishonesty - Plagiarism and Cheating:**

You should complete your homework assignments, programming assignments and exams **independently**. No discussion in any format is allowed unless you are informed otherwise. It is the student's responsibility to familiarize himself or herself with the consequences of academic dishonesty.

Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct ([http://www.doso.wayne.edu/student-conduct-services.html](http://www.doso.wayne.edu/student-conduct-services.html)). Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.

- **Cheating:** Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student’s test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.
• **Fabrication:** Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.

• **Plagiarism:** To take and use another’s words or ideas as one’s own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

• **Other** forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student’s access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

**Course Drops and Withdrawals:**

In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Pipeline. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: [http://reg.wayne.edu/pdf-policies/students.pdf](http://reg.wayne.edu/pdf-policies/students.pdf)

**Student services:**

• The Academic Success Center (1600 Undergraduate Library) assists students with content in select courses and in strengthening study skills. Visit [www.success.wayne.edu](http://www.success.wayne.edu) for schedules and information on study skills workshops, tutoring and supplemental instruction (primarily in 1000 and 2000 level courses).

• The Writing Center is located on the 2nd floor of the Undergraduate Library and provides individual tutoring consultations free of charge. Visit [http://clasweb.clas.wayne.edu/](http://clasweb.clas.wayne.edu/) writing to obtain information on tutors, appointments, and the type of help they can provide.

**Class recordings:**
Students need prior written permission from the instructor before recording any portion of this class. If permission is granted, the audio and/or video recording is to be used only for the student’s personal instructional use. Such recordings are not intended for a wider public audience, such as postings to the internet or sharing with others. Students registered with Student Disabilities Services (SDS) who wish to record class materials must present their specific accommodation to the instructor, who will subsequently comply with the request unless there is some specific reason why s/he cannot, such as discussion of confidential or protected information.