CSCI 576.01W – Intro to Computer Vision

COURSE SYLLABUS: Fall 2025

INSTRUCTOR INFORMATION

Instructor:	Kaoning Hu
Office Location:	JOUR 220
Office Hours:	M&W 10:00 – 12:00 T&R 11:00 – 12:00 (tentative)
Office Phone:	903-886-5409
Office Fax:	903-886-5404
University Email Address:	Kaoning.Hu@etamu.edu
Preferred Form of Communication:	Email
Communication Response Time:	1~2 business days

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook: "Foundations of Computer Vision " by Antonio Torralba, Phillip Isola and William T. Freeman.ISBN: 9780262048972. Publisher: The MIT Press. Open access: https://mitpress.mit.edu/9780262048972/foundations-of-computer-vision/

Prerequisite

CSCI 513 (Python Programming for AI) or 515 (Fund of Programming C/C++) required.
CSCI 520 (Data Structures) and 532 (Algorithms) recommended.

Course Description

This course introduces the concepts of computer vision. Through learning this course, students shall establish a solid foundation of representation and processing of color and image, and well as understanding the common techniques for the tasks of object detection, recognition, tracking, and classification.

The *syllabus/schedule are subject to change.*

Student Learning Outcomes

1. Understand image formation and color.
2. Implement and use Linear filters and convolution
3. Understand the representation of local features and textures
4. Understand stereopsis and multi-camera
5. Implement and use segmentation and clustering
6. Understand and use tracking algorithms
7. Understand and use classification and recognition methods, including artificial neural networks
8. Understand the problem of object detection
9. Other applications

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Students enrolling in this course should have mastered programming skills and understand basic data structures and algorithms.

Instructional Methods

We will release lecture videos weekly on D2L. Slides, supplementary materials, and assignments will be released online as well. *Please upload your assignments to the appropriate folders on myLeo(D2L)*.

Student Responsibilities or Tips for Success in the Course

1. Check the course website early every week.
2. Read the slides and other supplementary material carefully.
3. Start your project early.
4. Do not hesitate to ask questions to the instructor and the teaching assistant.

GRADING

Final grades in this course will be based on the following scale:

A = 90%-100%

B = 80%-89%

C = 70%-79%

D = 60%-69%

F = 59% or Below

The weight total grade is computed as

- Exams: 50%
- Average of assignments: 50%

Assessments

There will be

- 4~6 homework assignments

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- 2~3 exams.

Assignments will be graded on the following:

- meet specification of assignment
- have good organization and logic
- demonstrate good form, including remarks and indentation
- on-time (Late submission subject to the penalty.)

The time and coverage of each exam will be announced 1 week before the exam.
Make-up exams are given only if there is an emergency. If you take a make-up exam, you may receive a different set of questions with approximately the same difficulty level as the regular exam.
All assignments must be completed on time. Late submission is subject to penalty: up to 10% if late but no later than 24 hours; up to 20% if later than 24 hours but no later than 7 calendar days; up to 100% if later than 7 calendar days. However, the students and the instructor can negotiate on the due time and late penalty of the assignments.

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:
https://community.brightspace.com/s/article/Brightspace-Platform-Requirements

LMS Browser Support:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

Zoom Video Conferencing Tool
https://inside.tamuc.edu/campuslife/CampusServices/CITESupportCenter/Zoom_Account.aspx?source=universalmenu

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu**.**

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

https://community.brightspace.com/support/s/contactsupport

Interaction with Instructor Statement

To communicate with me about this course you are to use the email address on this syllabus. Please include the course number in the beginning of the subject field for every email message. During the week, you can generally expect a response to your emails within 1 business day. *If you do not receive my response in 2 business days, please send a second email to me.*
You can also call me at my office or stop by my office during office hours. You can also schedule an appointment by email.
My office location, phone number, and office hours are subject to change and amendment.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

Late submission of assignment subject to the penalty. However, you may negotiate the due date with the instructor before the assignment is overdue.
Make-up quizzes/exams are given only if there is an emergency. If you take a make-up quiz/exam, you may receive a different set of questions with approximately the same difficulty level as the regular quiz/exam.
When a make-up quiz/exam is impossible, you will receive a grade based on your in-class ranking in the next quiz/exam. E.g., if you miss Quiz 1 because of an emergency, and your rank in Quiz 2 is 10^{th} in the class, then we will copy the 10^{th} grade in Quiz 1 to your grade.
Extra credit may be possible.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.
http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: https://www.britannica.com/topic/netiquette

ETAMU Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedures 13.99.99.R0.01
http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf

Academic Integrity

Students at East Texas A&M University are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

Undergraduate Academic Dishonesty 13.99.99.R0.03
Undergraduate Student Academic Dishonesty Form

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/documents/13.99.99.R0.03UndergraduateStudentAcademicDishonestyForm.pdf

Graduate Student Academic Dishonesty Form

http://www.tamuc.edu/academics/graduateschool/faculty/GraduateStudentAcademicDishonestyFormold.pdf

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that

provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
East Texas A&M University
Velma K. Waters Library Rm 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@etamu.edu
Website: Office of Student Disability Resources and Services
http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/

Nondiscrimination Notice

East Texas A&M University will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in East Texas A&M University buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and ETAMU Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer.

Web url:
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all ETAMU campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

ETAMU Supports Students' Mental Health

The Counseling Center at ETAMU, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit **www.tamuc.edu/counsel**

The *syllabus/schedule are subject to change.*

AI use policy [Draft 2, May 25, 2023]

Important: *In this course, the use of AI is disallowed unless specified by the instructor per use. You must NOT use AI to generate any code.*

East Texas A&M University acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented source.

- 13.99.99.R0.03 Undergraduate Academic Dishonesty
- 13.99.99.R0.10 Graduate Student Academic Dishonesty

COURSE OUTLINE / CALENDAR

Week 1	Introduction, image formation, and color
Week 2	Foundations of learning
Week 3	Foundations of learning (continued)
Week 4	Linear filters
Week 5	Sampling and multiscale image representation
Week 6	Exam 1
Week 7	Artificial neural architecture for vision
Week 8	Probabilistic models
Week 9	Generative image models
Week 10	Representation learning
Week 11	Exam 2
Week 12	Challenges in learning-based vision
Week 13	Understanding geometry
Week 14	Understanding motion
Week 15	Object recognition with language
Week 16	Exam 3

Course calendar is **tentative** and will adapt to the actual progress of the classes and may not be accurately the same as the table above.

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