SSP100 – 10 – How Computers See
Fall 2026
Skidmore College
Syllabus

Instructor: Michael Eckmann
Office location: CIS230F
Contact email address: meckmann@skidmore.edu
Office Hours:

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Mondays    1:00 p.m. -  2:00 p.m.
Tuesdays   3:30 p.m. -  4:30 p.m.
Thursdays 11:00 a.m. - 12:00 noon
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or by appointment.
Instructor webpage: https://meckmann.domains.skidmore.edu/

***Course Description*:**

"How Computers See" is a course on applications of computer vision, both the technical details of the algorithms as well as the societal implications of these systems. We will study some of the history of applications of computer vision, the current trends and consider what lies ahead in the future for computer vision applications. Computer vision involves extracting content from images and video and interpreting that information. Through our study we will find that computer vision entails ideas from computer science, mathematics, biology, psychology, physics, and neuroscience. In addition, we will also explore the societal implications of computer vision applications (e.g. face recognition and surveillance.)

We will start off with some basic technical knowledge necessary to understand the readings and the technical topics in the course. The initial technical knowledge will relate to some general computer science concepts and computer vision concepts. Also in the first few weeks of the course, we touch on biological influences of computer vision and some basic computer vision algorithms.

We will then discuss both the technical aspects of and the societal implications of several main topics including:

a) Optical Character Recognition
b) Face Detection and Recognition
c) Robot Vision and driverless vehicles
d) Surveillance
e) Medical Applications

Readings / Videos:

The readings in the course will consist mostly of handouts and papers that are able to be downloaded from the web. Also, links to online videos can be watched to understand some of the content. See the class schedule for the specific topics each week.

Course Goals:

This course will introduce students to disciplinary and interdisciplinary perspectives on applications of computer vision. The interdisciplinary perspectives will include, but is not limited to biology, physics, politics, psychology, and neuroscience.
This course will provide students with
1. the basic knowledge of what computer science is and what computer vision is
2. an awareness of some of the major application areas of computer vision
3. the opportunity to consider the implications of the computer vision systems which include their effects on other fields and how other fields drive various research into computer vision
4. what science is and how scientists work

In addition, this is a course about knowing, particularly about ways to identify problems, formulate productive questions, and go about answering those questions.
Students in this course will demonstrate the ability to:
1. distinguish among, and formulate, types of questions asked by different disciplines
2. read critically, and gather and interpret evidence about computer vision and the implications of computer vision technologies
3. distinguish among the evidence and methodologies appropriate to different disciplines
4. consider and address complexities and ambiguities concerning the use of computer vision technologies
5. make connections among ideas, (for example between biological and computer vision)
6. recognize choices, examine assumptions and ask questions of themselves and of their own work
7. formulate conclusions based upon evidence
8. communicate ideas both orally and in writing
9. relate the results of the course to their educational goals

Class Schedule:

Weeks 1 & 2:

Day 1: Introduce the course with examples of the topics we'll cover in the course

Readings / Videos:
What is Computer science
Digital images - how their stored and processed
What is Computer vision

Topics:
Introduce background ideas
general computer science ideas
- how computers store information and process it
- problem vs. algorithm

what is computer vision
- image storage
- digital camera basics

Class discussion on summer reading on Tuesday 9/15 (with prompts to spark discussion sent out on Friday 9/11).

Week 3:

Readings: Handouts on:
History of computer vision applications

Topics:
- history of computer vision
  - initial problems solved, attempts
  - a few basic computer vision algorithms
- biology of human eye and other animal/insect eyes and their influence on computer vision

Lab: Low-level image processing

Weeks 4 & 5:

Readings: Handouts on:
General topic of Optical Character Recognition (OCR)
A reading on various solutions to the problem of OCR

Topics:
- optical character recognition
what is it, how is it solved, what's the current state of the art
how does OCR benefit/harm society

Lab: optical character recognition

(later weeks will be listed shortly)

Assessment

Grading:

Class Participation	10%
Assignments and Papers	45%
Midterm Exam	13%
Final Exam	17%
Presentation	15%

Class participation:

During class discussions we will discuss the technical aspects and societal implications of various applications. Discussions and readings we will try to read multiple sides of arguments for and against the technology. Students will be faced with making up their own minds about how to weigh the various benefits and detriments of the particular technology.

Weekly written assignments and papers:

These will include short summaries of reading assignments as well as several questions that the students formulate, pertaining to the readings, such as (but not limited to)
a) questions about how certain technologies work
b) ideas about other ways to achieve the same results
c) ideas on how one would create an experiment to answer questions that students formulate
d) questions about how the content of the reading relates to something else (another field perhaps)

Students will write a term paper on a topic of their choice or choose among several that I provide. The paper will require research into other sources of text not assigned in the course. A draft of the paper is due in week 8, with my feedback by end of week 9 and then students revise the paper in weeks 10 through 12. Students will do a dry run of a presentation individually to me during week 9, feedback will be given and a revised final presentation will be given along with the paper during week 13/14.

Exams:

Exams will ensure that the students know the facts behind the various topics which are discussed in detail during the semester.

Academic Integrity

I list here the policies by which the students of this class are expected to abide.
1. Skidmore Honor Code and Academic Integrity.
2. The Ethics of Scholarship.

Failure to abide by these policies results in a negative learning environment and you should expect to be held accountable.

Attendance

Please be on time as class will start promptly at the scheduled time.

Attendance is mandatory.

If you must miss class for a valid reason, please inform me ahead of time, via email preferably.

Students with Disabilities

Skidmore College is committed to supporting the learning needs of all students in our diverse community. If you have a documented barrier to learning or think you may have a disability, please consult with Meg Hegener, Director of Accessibility Services (mhegener@skidmore.edu). Accommodations are approved by the coordinator following a review of students' documentation. If you are approved for academic accommodations, please provide your letter of accommodations to me early in the semester or as soon as you are approved so that we can proactively coordinate implementation. Academic accommodations based on disability cannot be granted by individual faculty. For further information, please call (518) 580-8150 to contact The Learning Commons in Starbuck Center.

Conscientious Religious Observance Policy

Skidmore College acknowledges that our community is one of many faiths with a diverse range of practices and observances important to each tradition. In order to fulfill our mission to educate a diverse population of talented students and our commitment to inclusion regardless of religious and spiritual tradition, we seek to practice an equitable and consistent approach in providing religious accommodations. If religious observance requires absence from class or you anticipate a conflict with assignments or due dates, please notify your instructor prior to the absence or conflict so that accommodations can be arranged. Although not required, please provide notification about a pending religious holiday at the start of the semester or at least one week before the holiday. As an option, you may use the form available at www.skidmore.edu/religious-life/calendar.php . Accommodations for your absence should not reduce the overall expectations of a course nor unduly burden you for requesting accommodation. Students shall not suffer academic, athletic, or employment penalties because of the conscientious observance of any religious day or days. Faculty must permit students to take a makeup examination without any penalty if they have to miss an examination due to religious observances. Similarly, faculty must permit students to submit missed assignments by an agreed upon due date, without penalty. If a student, supervisor, coach, or faculty member feels the policy is being violated, they should contact the Dean of Faculty Office at 518-580-5705 (Palamountain 416), the Dean of Students Office at 518-580-5760 (Case Center 313), or Human Resources at 518-580-5800 (Barrett Center first floor). The full policy can be found at https://www.skidmore.edu/religious-life/calendar.php.

A listing of religious holidays that will occur during the Fall term can be found here: https://www.skidmore.edu/religious-life/calendar.php#Fall2026. Noting the date of major observances may help you avoid unnecessary conflict between course activities and religious holidays and plan for accommodation.

Attendance

Attendance is required, but my primary concern is your health and well-being. I ask that you miss class only when you are feeling poorly. If you do need to miss class, I will work

with you to the extent possible. If you are ill or will will miss class for some other reason, you should notify me as soon as possible so a plan can be worked out to make it up.

I do take attendance, often using a sign-in sheet. It is your responsibility to ensure you initial the sheet if you are present. Missing class will impact your grade most directly based on attendance. Missing class will also have an indirect impact on your grade in terms of your understanding and mastery of the concepts covered.

Title IX and Sexual and Gender-based Misconduct

Skidmore College considers sexual and gender-based misconduct to be one of the most serious violations of the values and standards of the College. Unwelcome sexual contact of any form is a violation of students' personal integrity and their right to a safe environment and therefore violates Skidmore's values. Sexual and gender-based misconduct is also prohibited by federal and state regulations. Skidmore College faculty are committed to supporting our students and upholding gender equity laws as outlined by Title IX. If a student chooses to confide in a member of Skidmore's faculty or staff regarding an issue of sexual or gender-based misconduct, that faculty or staff member is obligated to tell Skidmore's Title IX Coordinator or Title IX Deputy Coordinator. The Title IX Coordinator or Deputy Coordinator will assist the student in connecting with all possible resources for support and options for reporting both on and off campus. Identities and details will be shared only with those who need to know to support the student and to address the situation through the college's processes. If the student wishes to confide in a confidential resource, the Counseling Center Staff, Health Services, and Victim Advocates (anonymous) are all options available. More information can be found at the Sexual and Gender-Based Misconduct website or by contacting the Title IX Coordinator, Joel Aure (jaure@skidmore.edu), 580-5708.

Diversity and Inclusion

Skidmore College is committed to fostering a diverse and inclusive community in which members develop their abilities to live in a complex and interconnected world. Consistent with our educational mission, we recognize ourselves as a community that respects individual identities based on varying sociocultural characteristics such as race, ethnicity, gender identity and expression, sexual orientation, national origin, first language, religious and spiritual tradition, age, ability, socioeconomic status and learning style. We strive to create a socially just world that honors the dignity and worth of each individual, and we seek to build a community centered on mutual respect and openness to ideas—one in which individuals value cultural and intellectual diversity and share the responsibility for creating a welcoming, safe and inclusive environment. We recognize that our community is most inclusive when all members participate to their full capacity in the spirited and sometimes challenging conversations that are at the center of the college's educational mission.

Recording of Class Sessions

Audio and video recording of all or parts of class or lab sessions is prohibited. If you have an accommodation that allows recording, please let me know and an exception will be made.
Skidmore explicitly prohibits the sharing or publication of class session recordings without the written consent of the instructor.
Unauthorized recording or misuse of recordings may result in failure in the course.

Academic Integrity and the Honor Code

In this course, academic integrity means that all submitted work reflects your own effort. Regarding generative AI: the unacknowledged use of AI in submitted work will be considered an act of plagiarism. Although plagiarism is defined by Skidmore as "presenting as one's own, the work of another person" – and students might argue that chatbots and writing tools powered by generative AI are not persons – plagiarism also includes "failure to indicate accurately the extent and precise nature of one's reliance on other sources."

Further, you are strictly forbidden to upload / post / or otherwise share (for example, to any AI, online newsgroups, text or email to actual people) Programming Assignments, exam questions, or other homework assignments that assigned in this course.

Skidmore's Honor Code follows:

"I hereby accept membership in the Skidmore College community and, with full realization of the responsibilities inherent in membership, do agree to adhere to honesty and integrity in all relationships, to be considerate of the rights of others, and to abide by the college regulations."

Academic Calendar

We will adhere to the academic calendar including the Monday and Tuesday teaching days before Thanksgiving. We will also adhere to the registrar's final exam schedule. DO NOT make plans (or have anyone else book you on a flight) before your scheduled exams.

The schedule of final exams published early in the semester by the Registrar's Office cannot be changed except when "conflicts" exist (defined as two exams in the same time slot or three exams during the same day). A student's travel arrangements do not constitute a conflict.