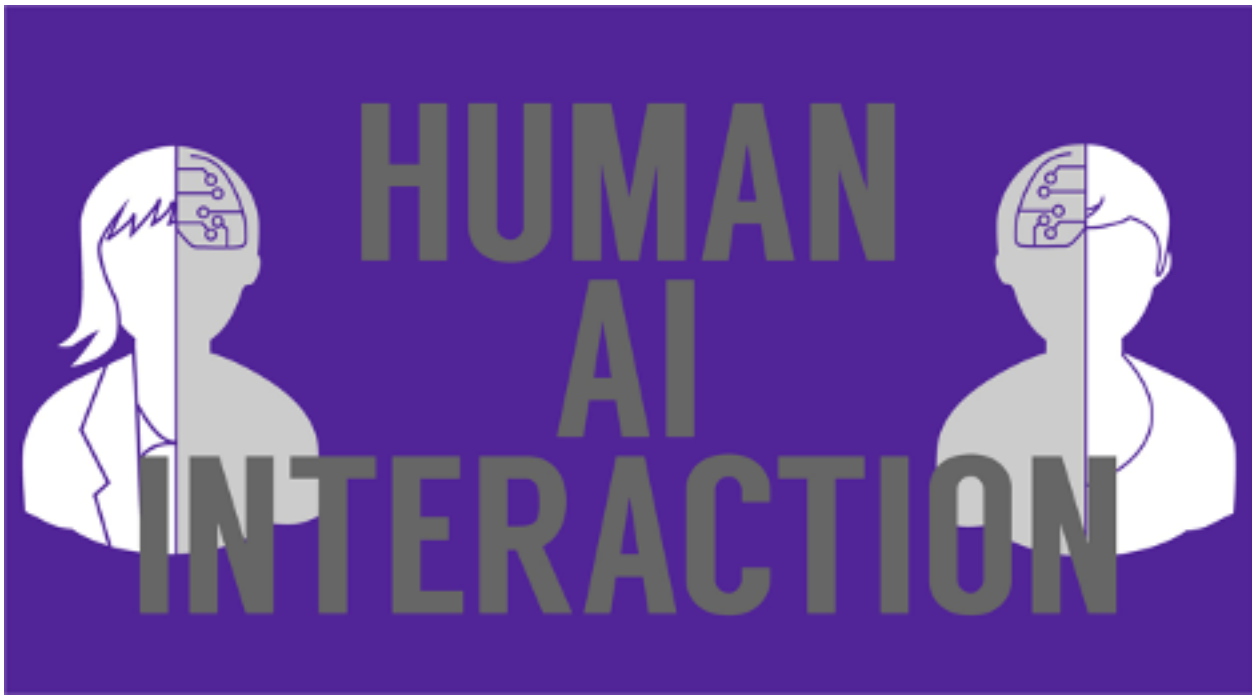


CSCI378: Human Artificial Intelligence Interaction (HAII)

<Link to course website>

Instructor:

Professor Iris Howley (she/her): call me "Iris" or "Professor Howley"

Email: <Link to email>

Student Help Hours: Wednesdays 12-1:30p; Thursdays 2:30-4p; Or reserve an Appointment slot: <Link to course website>

Course description:

As future innovators of the Artificial Intelligence frontier, we must be intentional about the impact our creations (and our creations' creations ...) have on our communities, our families, ourselves. AI is only useful in how it positively impacts the human experience, and in this course we explore how to harness the power of AI for the benefit of our world.

Course Structure

Learning Objectives:

After completing this course, students will be able to:

- Build intelligent interactive technologies
- Critically anticipate AI technology outcomes
- Intentionally design AI technologies for use by people
- Engage in current ongoing discussions of HAI

Courses in the Time of COVID:

I understand that this course is being offered in a time of uncertainty, and I recognize that you (and I) may encounter unexpected challenges during this semester. That includes challenges related to health and illness, technology, caregiving responsibilities, work responsibilities, and more.

My goal this semester is to support you in doing the best work you can in light of the challenges you face. I understand that Williams students face tremendous pressure to work hard, get "good" grades, and be as "successful" as possible. That said, I encourage you to remember that your health and well-being are far more important than the work you do in this class or any class. And I encourage you to take the time you need to care for yourself and for your loved ones.

If you tell me you're having trouble, I will not judge you or think less of you. I hope you'll extend me the same grace. I also ask that you be patient with me if the challenges of this semester force me to make last-minute changes to the course plan. I will do my best to communicate any changes clearly and make them with respect for the inconvenience, frustration, and confusion that change may cause.

You *never* owe me personal information about your health (mental or physical). You are *always* welcome to talk to me about things that you're going through, though. If I can't help you, I usually know somebody who can. If you need extra help, or if you need more time with something, or if you feel like you're behind or not understanding everything, **do not suffer in silence!** Talk to me! I will work with you. **I promise.**

Please attend Student Help Hours. I'm also available through e-mail and the course discussion forum.

I want you to learn lots of things from this class, but I primarily want you to stay healthy, balanced and grounded during this continuing crisis.

Course Format:

This course places hands-on, active learning at its center and I am excited to provide a learning experience that fully enables these activities. As such, this course will be offered as a combination of asynchronous course materials (content delivery) with bi-weekly classes where we do small group activities and discussions. All course materials will be posted on and accessible through Glow. Deadlines will be available in Glow, but in general, prior to your Tuesday class, you should complete all readings, videos & listening materials, and comprehension quiz assignments for that week's module. Thursday class will be for open discussion (lead by student pairs) and lab hours. I will generally try to post readings, videos &

listening materials on Thursdays or Fridays. There will be approximately 4 larger assignments, and one final project as well.

Course Grading and Assignments

Grading:

A grading breakdown is below:

Attendance & Active Participation	15%
Discussion Leading	5%
Comprehension Quizzes	20%
Assignments & Project	60%

Self-Reflections:

Quizzes are "ungraded." Your grade for the comprehension quizzes will be determined based on your own self-assessment of your learning and effort on the readings, lectures, and other content delivery, with the possibility of adjustments up or down from me. I reserve the right to alter your proposed quiz grade as appropriate, based on my own evaluation of your. If such an alteration seems warranted, I will contact you to set up a meeting to discuss your work in the course.

During the semester, you will be asked to complete four short self-reflection questionnaires. These questionnaires will include a series of questions about your work in the course. Specifically, you will be asked to:

- Talk about the work you have done in the course. e.g., How much effort did you commit to the reading and listening materials, the engagement activities, the comprehension quizzes, the class videos, and the class projects?
- Talk about your successes and struggles in the course. e.g., When did you feel most successful in the class? What challenges did you encounter with the concepts, the assignments, or the logistics of the course?
- Talk about opportunities for improvement. e.g., What steps could you take to deepen your understanding of course concepts or increase your engagement in the class?
- Propose the grade you feel you should receive on your quizzes (up to that point), based on your effort and comprehension of the readings, lectures, and other content delivery.
- Briefly explain why you would give yourself that grade.

Videos and Listening Materials:

Each week I will assign instructional videos, video lectures, or podcasts that must be watched prior to your first class meeting of the week. Some of these videos explain key AI or Human-Computer Interaction (HCI) concepts. Other videos offer examples of key concepts or explain how the reading materials illustrate these concepts. Still other videos introduce and explain the engagement activities and other assignments for the class. In general, there will be two sets of Video/Audio materials for each module. They are typically posted on Thursday or Friday.

Readings:

Each week includes one set of readings. These materials include a mix of news articles and academic journal articles. I have chosen these materials to illustrate key course concepts that I will be discussing in the recorded videos or that we will discuss in our class.

Comprehension Quizzes:

Each week will include a short quiz to evaluate your comprehension of the materials. The quizzes are required but I will not record your grades. Instead, I encourage you to use the quizzes as an opportunity to evaluate your own understanding of the course material. Quizzes will typically be due prior to your first class session of the week.

Course Assignments:

You will be asked to complete 4 assignments and 1 project for this course. These assignments allow you to activate and demonstrate your understanding of the course concepts in creative and meaningful ways. Assignment deadline will also be preceded by a pass/fail Assignment Check-in that will help you distribute the effort required for the assignment. I will describe these assignments in more detail as we approach their release.

Discussion Leading:

Once per week, a pair of students will lead a discussion of that week's readings. An outline of the planned discussion will be due one day before the discussion.

Late Policy:

It is imperative that you complete the readings and watchings prior to class, otherwise you will not be able to participate. On all other deliverables for the course, three late days will be allowed over the entire semester no explanations needed, provided you email me prior to the assignment deadline letting me know your assignment will be late and how many late days you require. Additional late days are possible, but you must reach out to Iris prior to the deadline with an explanation of the situation.

Expected Workload

At Williams, we operate under the course unit system (rather than the credit hour system) as the metric required by many employers, granting organizations, graduate schools, and federal

agencies. In addition to the 3 hours we spend together during our bi-weekly class time, you should expect to spend (on average) at least 12 hours per week on the academic and creative work related to class. If you find that you are spending considerably more (or considerably less!) time to engage with this course academically, please contact me so that we can determine the best course of action as you approach the materials. Should you have any additional questions about the relationship of course units to credit hours, refer to the Office of the Registrar, which explains our course unit equivalency in greater detail.

Course Policies and Expectations

Learning Environment and Expectations:

Each person comes to the class with a unique background and perspective. I encourage you to draw on those perspectives when engaging with course materials and discussing them with your classmates. Please keep in mind that sharing opinions and experiences is a valuable but sometimes uncomfortable experience. Everyone must make the commitment to create an atmosphere of respect for each person's contribution. Varying points of view are welcome and expected. Please be respectful and open-minded when listening to viewpoints different from your own. If you disagree with an argument, criticize the evidence that supports a stance or the negative implications of a viewpoint; ask questions that challenge certain assumptions; but, please do not criticize the individual who holds that view. I do not tolerate discrimination.

Digital Devices:

You will need an internet-connected digital device that can run python and you can install additional python modules onto (i.e., a laptop or desktop computer), particularly for the course assignments. In particular, Anaconda python is a useful python distribution that comes with a variety of libraries that are necessary for this class.

I recognize that some students are unable to afford the cost of purchasing digital devices and that other students rely on older, more problem-prone devices that frequently break down or become unusable. I also recognize that those technology problems can be a significant source of stress for students.

If you do not have access to reliable internet or a reliable, internet-connected digital device for programming, I encourage you to contact the Dean of Students Office to request assistance. If you contact me, as well, I can help you write a message to the Dean of Students and also work with you to develop a plan for completing work in this course.

If you are experiencing problems with your device or internet access, I encourage you to contact the Office of Information Technology for support.

If those problems are persistent and/or interfere with your ability to complete the work for this course, please let me know.

Please post a link to your favorite song about technology to the 'Random' discussion forum in Glow so I can see who is reading the syllabus :)

I also encourage you to be aware of the many technology-related resources that Williams College provides:

- Free on-campus wireless internet (wifi) accessed through the "eduroam" network. (For help connecting your device to the network, visit the OIT website).
- Free software (including Microsoft Office, Adobe Creative Suite, statistical software, etc.) described on the OIT website.
- Free large quantity, secure online storage through Google Drive (a great way to back up files, Drive File Stream is particularly handy for accessing your Google Drive materials offline).
- Free regular support with issues related to OIT technology (e.g., email, Glow, wifi, printing, device setup, etc.).

Basic Needs Security:

Some Williams students experience difficulties affording groceries or accessing sufficient food to eat every day. Some lack a safe and stable place to live. Some Williams students experience challenges balancing school work with paid work, childcare, and other family obligations. Those challenges can create considerable anxiety for students and may also affect students' performance in their courses. Students experiencing those challenges are urged to contact the Dean of Students for support (online at https://dean.williams.edu/ or by email at chaley@williams.edu or by phone at 413.597.4171). If you are experiencing challenges with food, housing, work, and/or family obligations, please notify me (ikh1@williams.edu) if you are comfortable in doing so. This will enable me to assist you in accessing support.

Family Commitments:

If you have care responsibilities for children or other family members, and if your caregiving responsibilities come into conflict with the course schedule, please don't feel as though you have to miss class. I understand that sometimes plans fall through. If this happens, you are welcome to contact me, and we can reschedule assignments.

Students Who Need Accommodations:

If formal accommodations need to be made to meet your specific learning or physical abilities, please contact me as soon as possible to discuss appropriate accommodations. Please also contact the Director of Accessible Education, Dr. G. L. Wallace (413.597.4672) or the Dean's office (413.597.4171). We will work together to ensure this class is as accessible and inclusive as possible. Also, students experiencing mental or physical health challenges that are significantly affecting their academic work are encouraged to contact me or to speak with a dean. The deans can be reached at 413.597.4171.

Support for Students Experiencing Bias, Discrimination, Harassment or Abuse:

As your instructor, one of my responsibilities is to create a positive learning environment for all students. Title IX and Williams's Sexual Misconduct Policy prohibit sexual misconduct in any form, including sexual harassment, sexual assault, stalking, and dating and domestic violence. If you have experienced sexual misconduct, or know someone who has, the College can help. If you are seeking help and would like to speak to someone confidentially, you can contact: Integrative Wellbeing Services staff at 413.597.2353 (counseling services), The Rape and Sexual Assault Network (RASAN) at 413.597.4100 (peer advice services), Williams Health Center staff at 413.597.2206 (health and medical services). It is also important that you know that Title IX and College policy require professors to share any information brought to their attention about potential sexual misconduct, with the Williams's Title IX Coordinator. In that event, those individuals will work to ensure that appropriate measures are taken and resources are made available. Protecting student privacy is of utmost concern, and information will only be shared with those that need to know to ensure the College can respond and assist. We encourage you to visit https://titleix.williams.edu/for-students/ to learn more.

More generally, any act of discrimination or harassment based on race, ethnicity, religious affiliation, gender, gender identity, sexual orientation or disability can be reported through any of these options: 1) complete the Office of Institutional Diversity, Equity, and Inclusion's (OIDEI) online form; 2) call the Office of Institutional Diversity, Equity, and Inclusion at 413.597.4376; or 3) contact the Assistant Vice President for Institutional Diversity and Equity/Title IX Coordinator.

Academic Integrity:

Assignments and quizzes are to be the sole work of each student unless the assignment explicitly states otherwise. Students may discuss issues related to an assignment, provided that such discussions are cited in the material turned in. Any ideas, code, images, or text that is not original to the student(s) must have the original source cited, both in the code comments and in the display text. Uncredited collaborations will be considered a violation of the honor code and will be handled appropriately. For a full description of the Computer Science Honor Code, please see https://csci.williams.edu/the-cs-honor-code-and-computer-usage-policy/ If in doubt of what is appropriate, do not hesitate to ask.

Furthermore, part of your grade in this class relies on your self-reflection of your own progress, it is imperative that you are honest in your assessment of your activities for this class. i.e., it is a breach of Honor Code to falsely claim completed work that you have not done for this course.

Intellectual Property:

No part of this course may be reproduced nor distributed in any manner without prior permission from the instructor.

Course Content

The content of this course will be accessible through materials posted on the Glow site. In order to be prepared for weekly classes, I encourage you to complete each assignment by the recommended completion date listed with that assignment. If you experience problems that delay your progress through these assignments, please let me know.

The content of the topics is subject to change. However, the order of the topics will, roughly, be as follows:

Module 0: Getting Started in the Class

Why does Human-AI interaction matter? Who is this Iris person? What are the basic course logistics? What social distancing related things should I be aware of?

Module 1: Introduction to Human-AI Interaction

What is AI? What is machine learning? What is the machine learning pipeline?

Module 2: Perspectives on Human-AI Interaction

Why were there previous "AI winters"? What is the history of humans interacting with AI? Artificial Intelligence versus Intelligence Augmentation.

Module 3: Designing AI/ML User Experiences

How do we take into consideration user needs and values as we design user-facing AI systems?

Module 4: Designing for Failure

How do we design around the inevitable AI failures for our stakeholders?

Module 5: Data & Knowledge

Where does data come from and who owns it? How do we get enough data (ethically) for our AI systems?

Module 6: Visualizing Complex Predictive Data

Designing visualizations to improve user understanding of AI outputs, as well as designing visualizations to assist developers who build AI/ML systems.

Module 7: Interpreting and Explaining Algorithms

How do we explain our AI systems for sufficient user understanding so users can interrogate the system's predictions?

Module 8: AI Ethics, Fairness, Social Acceptability, and Trust

Applying Distributional justice approaches to improve fairness in AI systems.

Module 9: Humans in the Loop

Building systems that leverage collaboration between humans and AI systems.

Module 10: Natural Language and Speech Applications

Using neural nets for conversational agents.

Module 11: Vision, Images, and Art + AI Jobs

The pros, cons, and how-tos of AI-generated imagery, GANs.

Module 12: Recommender Systems + Course Wrap-up

Recommender Systems, continuing to study HAII, course wrap-up