CS-0263: Artificial Intelligence

COURSE INFORMATION

Instructor(s):

Lee Spector
lasCCS@hampshire.edu
Office Extension: x5352
Office Hours:
Regular office hours: Tuesdays 10:30-11:30, Thursdays 10:30-11:30 and 2:00-3:30. I am available at many other times as well; feel free to contact me in person or via email to arrange other meeting times. Sign up for regular office hours and advising day meetings here.

TA(s):

Julian Oks
juao15@hampshire.edu
Office Hours:
By appointment

Tapojit Debnath Tapu
tde15@hampshire.edu
Office Hours:
Thursday: 7.30pm-10pm

Sunday: 6.30pm-10pm (Email by appointment is preferred)

(in ASH 126)

Term:

2017F

Meeting Info:

Tuesday	12:30 PM - 01:50 PM Adele Simmons Hall (ASH) 126
Thursday	12:30 PM - 01:50 PM Adele Simmons Hall (ASH) 126

Description:

Artificial Intelligence is a branch of computer science concerned with the development of computer systems that "think." In this course we will explore the core ideas of artificial intelligence through readings, presentations, discussions, and hands-on programming activities. A range of practical artificial intelligence techniques will be covered, and students will complete programming projects to demonstrate engagement with the themes of the course. Prerequisite detail: One programming course (in any language).

Course Objectives:

- To gain familiarity with a range of concepts and computational techniques that have been developed by AI researchers over history of the field.
- To apply several of these concepts and techniques to hands-on research and development activities.
- To develop skills in "functional"-style programming.
- To conduct independent programming-based project work.
- To develop project presentation skills.
- To work collaboratively with classmates.

Evaluation Criteria:

You will be evaluated on the basis of attendance, participation (both in class and in out-of-class activities), a portfolio of code and text, and in-class demo presentations (3 minutes each, max 1 minute setup).

Portfolios must be submitted for review on scheduled demo days. Each portfolio submission must be cumulative, and must include a new "self-eval map" of the following form:

```
{:name "Your name, in exactly the same format each time."
 :submission 0 ; a number, starting with 0 and counting up each time
 :attendance "Your attendance since the last submission, in one sente
nce."
 :demonic "What you did in demonic coding sessions, in one sentence."
 :rice [ ;; a vector containing a map for each RICE session since the
 prior submission
        {:partner "Who you met with."
         :location "Where you met."
         :time "When you met."
         :topics "What you discussed."}]
 :code "A sentence describing the code you added to your portfolio."
 :text "A sentence describing the text you added to your portfolio."
 :presentation "A sentence describing what you're presenting in the d
emo session."
 :knowledge "A sentence describing what you've learned in the course
 recently."}
```

You should demonstrate through your participation, code, and text that you have read and thought about the course readings. Portfolios should demonstrate facility with the code environment used in the class and engagement with several of the class topics at the implementation level.

HAMPSHIRE STUDENTS (WHO GET NARRATIVE EVALUATIONS)

Any missed, late, or inadequate portfolio submissions or demos will be noted in your evaluation, along with any significant failures to participate in demonic coding or RICE activities. If you fail to submit 2 or more assignments, or to present 2 or more of the demos, or to participate in 2 or more demonic coding sessions or RICE activities, then you should not expect to receive an evaluation.

FIVE COLLEGE STUDENTS (WHO GET GRADES)

Each portfolio submission will be graded on a scale from 0-100. Each demo will also be graded on a scale from 0-100. Attendance and participation will also be graded on a scale from 0-100. For your final grade I will calculate:

score = (0.4 * assignment average) + (0.4 * demo average) + (0.2 * attendance and participation)

Additional Info: ⚙

DIVISION I DISTRIBUTION CREDIT

Successful completion of this course satisfies the Division I distribution requirement in Mind, Brain, and Information. This course provides opportunities for satisfaction of Division I cumulative skills requirements in Quantitative Skills and Independent Work.

TEXTS

Living Clojure: An Introduction and Training Plan for Developers by Carin Meier. O'Reilly Media, Inc. 2015. ISBN-13: 978-1491909041, ISBN-10: 1491909048

All other reading/video/audio will be available from the class website.

SOFTWARE

We will learn and use the Clojure programming language, editing and running code with Gorilla REPL and managing projects with Leiningen. All of this software is free and runs on multiple platforms. Installation procedures will be covered in class.

Many other Clojure development environments exist. You can use another one if you really want to, but if you do so you should not expect any support for that usage from me or TAs. You may **not** use an environment without the feature that automatically re-indents Clojure code. Code that is not properly indented should never be included in a portfolio, shown in a presentation, or sent to me or the TAs with a request for help. You must work in an editor with automatic reindentation and you must use that feature consistently to keep your code indented properly.

We will use the Rock Paper Stuff game environment to explore some of the AI techniques that we cover, and you should include code for Rock Paper Stuff players in your portfolio.

CLOJURE RESOURCES

- Clojure.org, the main site for the Clojure language
- Leiningen, a Clojure project management tool
- Gorilla REPL, a browser-based Clojure code editing environment
- Try Clojure, an online Clojure REPL
- Clojinc, a saved REPL session intended to support semi-independent learning of Clojure
- 4Clojure, interactive Clojure problems
- Clojure Cheatsheet
- ClojureDocs, a community-powered documentation and examples repository
- Grimoire, an alternative cheatsheet/documentation site
- Clojure Documentation, an alternative documentation site
- Two blog posts on dealing with Clojure error messages (stack traces): 1 and 2
- Clojure for the Brave and True, a Clojure textbook (free online)

- Other Clojure books
- Learn X in Y minutes, Where X=clojure, a brief introduction to Clojure
- Clojurians Slack channel
- Clojure Google group, discussion forum and email list
- CrossClj, cross-reference of the Clojure ecosystem
- Companies that use Clojure
- Clojure TV
- Clojure resources listed on the official Clojure site

FACILITIES

You may use your own computer and/or the Macs in ASH 126, which will be available at various posted hours. You should not expect files left on the Macs in ASH 126 to persist; the discs on those machines may be erased without notice at any time.

DIFFICULTY/LEVEL

This course is intended to serve students with a wide range of backgrounds, including students with only one previous programming course (in any language) and students with significant computer science and programming experience.

Students with *little* previous experience should resist being intimidated by the more difficult readings, etc., and bear in mind that I take background into account in writing evaluations and in grading. If you find a reading to be difficult, try to extract the gist of it (which may be all that you need at this point in your learning) and talk to me if you want to understand more. If you have prior programming experience roughly equivalent to at least a single programming-based course, using any programming language, and if you are interested in the course material, then ***I want you to stay in the course and I will work with you to help you succeed.***

Students with extensive previous experience should note that the class is structured to provide ample opportunities for more advanced work; feel free to talk to me about ideas for projects, etc.

DEMONIC CODING

Many class sessions will be dedicated in part or entirely to demonic coding. You must therefore have access to your current work files every day -- on a laptop computer, or a thumb drive, or a networked server, etc. -- and always be ready to participate as a coder in a demonic coding session.

RICE: REQUIRED IMMERSIVE COLLABORATIVE EXPERIENCE

Several times throughout the semester, you will be directed to engage in a Required Immersive Collaborative Experience (RICE) activity.

Student pairings may be assigned by the me or the TAs, possibly assisted by algorithms. If you have concerns regarding pairings, let me know. If you find that you have a partner who is not sufficiently cooperative in setting up a meeting, let me know at least two days before the deadline so that alternative arrangements can be made in time for you to stay on schedule.

RICE session reports should be included in self-eval maps in portfolio submissions.

FIVE COLLEGE LOGIC CERTIFICATE

Students interested in using this course to satisfy requirements for the Five College Logic Certificate can focus on the logic-related material (logic programming and/or automated theorem proving) in their project work, and request that I describe this work in course evaluations.

POLICIES IN REGARDS TO ILLNESS, EPIDEMIC, OR PANDEMIC

If you have a fever, please stay home, take good care of yourself, and contact me by email or phone. If your illness makes it impossible for you to meet the course deadlines then contact me and we will negotiate an accommodation.

ADAPTATIONS AND ACCOMMODATIONS

If you need course adaptations or accommodations because of a disability, or if you have a medical condition that may impact your performance or participation in this course, then please let me know.

If you have approved accommodations then please go to Accessibility Services in CASA to pick up Letters of Accommodation to facilitate a proactive discussion about reasonable accommodations for this course. If you have documented disabilities but have not already already contacted Accessibility Services, the I encourage you to do so. Accessibility Services can be contacted via email: Accessibility@hampshire.edu, via phone: 413-559-5498, or in person at CASA.

PLAGIARISM POLICY

Official policy text:

> All Hampshire College students and faculty, whether at Hampshire or at other institutions, are bound by the ethics of academic integrity. The entire description and college policy can be found in Non Satis Non Scire at handbook.hampshire.edu under Academic Policies/Ethics of Scholarship. Plagiarism is the representation of someone else's work as one's own. Both deliberate and inadvertent misrepresentations of another's work as your own are considered plagiarism and are serious breaches of academic honesty and integrity. All sources used or consulted in the process of writing papers, examinations, preparing oral presentations, course assignments, artistic productions, and so on, must be cited. Sources include material from books, journals or any other printed source, the work of other students, faculty, or staff, information from the Internet, software programs and other electronic material, designs and ideas. ... All cases of suspected plagiarism or academic dishonesty will be referred to the Dean of Advising who will review documentation and meet with student and faculty member. Individual faculty, in consultation with the Dean of Advising, will decide the most appropriate consequence in the context of the class. This can range from revising and resubmitting an assignment to failing the course. Beyond the consequence in the course, CASA considers first offenses as opportunities for education and official warning. Multiple or egregious offenses will have more serious consequences. Suspected instances of other breaches of the ethics of academic integrity, such as the falsification of data, will be treated with the same seriousness as plagiarism and will follow the same process.

In this course we will often be sharing and borrowing code. This is an important aspect of the course and an important aspect of modern programming practice. This does not mean, however, that it is acceptable to submit code that is not your own without acknowledging sources. Sources should be clearly and explicitly provided in everything that you produce.

Add an activity or resource

Select an activity or resource to view its help. Double-click on an activity or resource name to quickly add it.

ACTIVITIES

Assignment

The assignment activity module enables a teacher to communicate tasks, collect work and provide grades and feedback.

Students can submit any digital content (files), such as word-processed documents, spreadsheets, images, or audio and video clips. Alternatively, or in addition, the assignment may require students to type text directly into the text editor. An assignment can also be used to remind students of 'real-world' assignments they need to complete offline, such as art work, and thus not require any digital content. Students can submit work individually or as a member of a group.

When reviewing assignments, teachers can leave feedback comments and upload files, such as marked-up student submissions, documents with comments or spoken audio feedback. Assignments can be graded using a numerical or custom scale or an advanced grading method such as a rubric. Final grades are recorded in the gradebook.

More help

Attendance

The attendance activity module enables a teacher to take attendance during class and students to view their own attendance record.

The teacher can create multiple sessions and can mark the attendance status as "Present", "Absent", "Late", or "Excused" or modify the statuses to suit their needs.

Reports are available for the entire class or individual students.

Database

The database activity module enables participants to create, maintain and search a collection of entries (i.e. records). The structure of the entries is defined by the teacher as a number of fields. Field types include checkbox, radio buttons, dropdown menu, text area, URL, picture and uploaded file.

The visual layout of information when listing, viewing or editing database entries may be controlled by database templates. Database activities may be shared between courses as presets and a teacher may also import and export database entries.

If the database auto-linking filter is enabled, any entries in a database will be automatically linked where the words or phrases appear within the course.

A teacher can allow comments on entries. Entries can also be rated by teachers or students (peer evaluation). Ratings can be aggregated to form a final grade which is recorded in the gradebook.

Database activities have many uses, such as

- A collaborative collection of web links, books, book reviews, journal references etc

- For displaying student-created photos, posters, websites or poems for peer comment and review

More help

Feedback

The feedback activity module enables a teacher to create a custom survey for collecting feedback from participants using a variety of question types including multiple choice, yes/no or text input.

Feedback responses may be anonymous if desired, and results may be shown to all participants or restricted to teachers only. Any feedback activities on the site front page may also be completed by non-logged-in users.

Feedback activities may be used

- For course evaluations, helping improve the content for later participants
- To enable participants to sign up for course modules, events etc.
- For guest surveys of course choices, school policies etc.
- For anti-bullying surveys in which students can report incidents anonymously

More help

Forum

The forum activity module enables participants to have asynchronous discussions i.e. discussions that take place over an extended period of time.

There are several forum types to choose from, such as a standard forum where anyone can start a new discussion at any time; a forum where each student can post exactly one discussion; or a question and answer forum where students must first post before being able to view other students' posts. A teacher can allow files to be attached to forum posts. Attached images are displayed in the forum post.

Participants can subscribe to a forum to receive notifications of new forum posts. A teacher can set the subscription mode to optional, forced or auto, or prevent subscription completely. If required, students can be blocked from posting more than a given number of posts in a given time period; this can prevent individuals from dominating discussions.

Forum posts can be rated by teachers or students (peer evaluation). Ratings can be aggregated to form a final grade which is recorded in the gradebook.

Forums have many uses, such as

- A social space for students to get to know each other
- For course announcements (using a news forum with forced subscription)
- For discussing course content or reading materials
- For continuing online an issue raised previously in a face-to-face session
- For teacher-only discussions (using a hidden forum)
- A help centre where tutors and students can give advice
- A one-on-one support area for private student-teacher communications (using a forum with separate groups and with one student per group)
- For extension activities, for example ‘brain teasers’ for students to ponder and suggest solutions to

More help

Glossary

The glossary activity module enables participants to create and maintain a list of definitions, like a dictionary, or to collect and organize resources or information.

A teacher can allow files to be attached to glossary entries. Attached images are displayed in the entry. Entries can be searched or browsed alphabetically or by category, date or author. Entries can be approved by default or require approval by a teacher before they are viewable by everyone.

If the glossary auto-linking filter is enabled, entries will be automatically linked where the concept words and/or phrases appear within the course.

A teacher can allow comments on entries. Entries can also be rated by teachers or students (peer evaluation). Ratings can be aggregated to form a final grade which is recorded in the gradebook.

Glossaries have many uses, such as

- A collaborative bank of key terms
- A 'getting to know you' space where new students add their name and personal details
- A 'handy tips' resource of best practice in a practical subject
- A sharing area of useful videos, images or sound files
- A revision resource of facts to remember

More help

Lesson

The lesson activity module enables a teacher to deliver content and/or practice activities in interesting and flexible ways. A teacher can use the lesson to create a linear set of content pages or instructional activities that offer a variety of paths or options for the learner. In either case, teachers can choose to increase engagement and ensure understanding by including a variety of questions, such as multiple choice, matching and short answer. Depending on the student's choice of answer and how the teacher develops the lesson, students may progress to the next page, be taken back to a previous page or redirected down a different path entirely.

A lesson may be graded, with the grade recorded in the gradebook.

Lessons may be used

- For self-directed learning of a new topic
- For scenarios or simulations/decision-making exercises
- For differentiated revision, with different sets of revision questions depending upon answers given to initial questions

More help

Questionnaire

The questionnaire module allows you to construct surveys using a variety of question types, for the purpose of gathering data from users.

Quiz

The quiz activity enables a teacher to create quizzes comprising questions of various types, including multiple choice, matching, short-answer and numerical.

The teacher can allow the quiz to be attempted multiple times, with the questions shuffled or randomly selected from the question bank. A time limit may be set.

Each attempt is marked automatically, with the exception of essay questions, and the grade is recorded in the gradebook.

The teacher can choose when and if hints, feedback and correct answers are shown to students.

Quizzes may be used

- As course exams
- As mini tests for reading assignments or at the end of a topic
- As exam practice using questions from past exams
- To deliver immediate feedback about performance
- For self-assessment

More help

Scheduler

The scheduler activity helps you in scheduling appointments with your students.

Teachers specify time slots for meetings, students then choose one of them on Moodle. Teachers in turn can record the outcome of the meeting - and optionally a grade - within the scheduler.

Group scheduling is supported; that is, each time slot can accommodate several students, and optionally it is possible to schedule appointments for entire groups at the same time.

More help

Wiki

The wiki activity module enables participants to add and edit a collection of web pages. A wiki can be collaborative, with everyone being able to edit it, or individual, where everyone has their own wiki which only they can edit.

A history of previous versions of each page in the wiki is kept, listing the edits made by each participant.

Wikis have many uses, such as

- For group lecture notes or study guides
- For members of a faculty to plan a scheme of work or meeting agenda together
- For students to collaboratively author an online book, creating content on a topic set by their tutor
- For collaborative storytelling or poetry creation, where each participant writes a line or verse
- As a personal journal for examination notes or revision (using an individual wiki)

More help

Workshop

The workshop activity module enables the collection, review and peer assessment of students' work.

Students can submit any digital content (files), such as word-processed documents or spreadsheets and can also type text directly into a field using the text editor.

Submissions are assessed using a multi-criteria assessment form defined by the teacher. The process of peer assessment and understanding the assessment form can be practised in advance with example submissions provided by the teacher, together with a reference assessment. Students are given the opportunity to assess one or more of their peers' submissions. Submissions and reviewers may be anonymous if required.

Students obtain two grades in a workshop activity - a grade for their submission and a grade for their assessment of their peers' submissions. Both grades are recorded in the gradebook.

More help

RESOURCES

 File

The file module enables a teacher to provide a file as a course resource. Where possible, the file will be displayed within the course interface; otherwise students will be prompted to download it. The file may include supporting files, for example an HTML page may have embedded images or Flash objects.

Note that students need to have the appropriate software on their computers in order to open the file.

A file may be used

- To share presentations given in class
- To include a mini website as a course resource
- To provide draft files of certain software programs (eg Photoshop .psd) so students can edit and submit them for assessment

More help

 Folder

The folder module enables a teacher to display a number of related files inside a single folder, reducing scrolling on the course page. A zipped folder may be uploaded and unzipped for display, or an empty folder created and files uploaded into it.

A folder may be used

- For a series of files on one topic, for example a set of past examination papers in pdf format or a collection of image files for use in student projects
- To provide a shared uploading space for teachers on the course page (keeping the folder hidden so that only teachers can see it)

More help

 Label

The label module enables text and multimedia to be inserted into the course page in between links to other resources and activities. Labels are very versatile and can help to improve the appearance of a course if used thoughtfully.

Labels may be used

- To split up a long list of activities with a subheading or an image
- To display an embedded sound file or video directly on the course page
- To add a short description to a course section

More help

Lightbox Gallery

The Lightbox Gallery resource module enables participants to view a gallery of images.

This resource allows you to create 'Lightbox' enabled image galleries within your Moodle course.

As a course teacher, you are able to create, edit and delete galleries. Small thumbnails will then be generated, which are used for the thumbnail view of the gallery. Clicking on any of the thumbnails brings that image into focus, and allows you to scroll through the gallery at your leisure. Using the Lightbox scripts creates nice transition effects when loading and scrolling through the images.

If enabled, users are able to leave comments on your gallery.

Page

The page module enables a teacher to create a web page resource using the text editor. A page can display text, images, sound, video, web links and embedded code, such as Google maps.

Advantages of using the page module rather than the file module include the resource being more accessible (for example to users of mobile devices) and easier to update.

For large amounts of content, it's recommended that a book is used rather than a page.

A page may be used

- To present the terms and conditions of a course or a summary of the course syllabus
- To embed several videos or sound files together with some explanatory text

More help

URL

The URL module enables a teacher to provide a web link as a course resource. Anything that is freely available online, such as documents or images, can be linked to; the URL doesn’t have to be the home page of a website. The URL of a particular web page may be copied and pasted or a teacher can use the file picker and choose a link from a repository such as Flickr, YouTube or Wikimedia (depending upon which repositories are enabled for the site).

There are a number of display options for the URL, such as embedded or opening in a new window and advanced options for passing information, such as a student's name, to the URL if required.

Note that URLs can also be added to any other resource or activity type through the text editor.

More help

Add Cancel

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 7 September (12:30PM - 01:50PM)

Overview

Introductions

Syllabus

Discussion

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 12 September (12:30PM - 01:50PM)

AI, Clojure, Demons, and RICE

Read the Preface of *Living Clojure*.

Read the Chapter 1 ("Dreams and Dreamers") of *The Quest for Artificial Intelligence*, by Nils J. Nilsson.

Read How to Regulate Artificial Intelligence, by Oren Etzioni.

Listen to RS 186 - Tania Lombrozo on "Why we evolved the urge to explain" for what it says about intelligence, which is relevant to the systems we'll be studying and building, and also what it says about learning, which is relevant to our class activities.

RICE Assignments

RICE assignment generator Edit

First RICE assignments Edit

See assignment generator code for email addresses.

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 14 September (12:30PM - 01:50PM)

Hands-on Clojure

Read Chapter 1 of *Living Clojure* ("The Structure of Clojure").

Read Artificial intelligence: The future is superintelligent, a review of Max Tegmark's book *Life 3.0: Being Human in the Age of Artificial Intelligence* by Stuart Russell.

Read and begin to work through Clojinc, a saved REPL session intended to support semi-independent learning of Clojure.

Optional: Listen to the Defn podcast episode with Carin Meier.

Optional: Read Trurl's Electronic Bard by Stanislaw Lem.

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 19 September (12:30PM - 01:50PM)

Visit from the MassMutual Data Science Development Program; Rock Paper Stuff

Read pp. 25-38 of *Living Clojure* ("Controlling the Flow with Logic" and "Functions Creating Functions and Other Neat Expressions").

Read Beating the Averages, by Paul Graham.

Read the Rock Paper Stuff README file.

RICE Deadline & Assignments

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 21 September (12:30PM - 01:50PM)

Demonic Coding (& Rosh Hashana)

Read pp. 38-53 of *Living Clojure* ("Destructuring," "The Power of Laziness", "Recursion", and "The Functional Shape of Data Transformations").

Read Human-Level AI Is Right Around the Corner—or Hundreds of Years Away: Ray Kurzweil, Rodney Brooks, and others weigh in on the future of artificial intelligence

Read AI will reshape the world, an interview with Subbarao Kambhampati by Joe Kullman (just read interview, don't feel obliged to watch linked video).

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 26 September (12:30PM - 01:50PM)

Portfolios/Demos

RICE Deadline & Assignments

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 28 September (12:30PM - 01:50PM)

Advising Day: No Class

Read Chapter 2 (pp. 27-66, "Clues") of *The Quest for Artificial Intelligence*, by Nils J. Nilsson.

Read Computing Machinery and Intelligence, by Alan Turing.

Check out Meet These Incredible Women Advancing A.I. Research, by Mariya Yao.

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 3 October (12:30PM - 01:50PM)

Search

Read Sections 3.1-3.6 ("Problem Solving as Search," "State Spaces," "Graph Searching," "A Generic Searching Algorithm," "Uninformed Search Strategies," "Heuristic Search," and "Pruning the Search Space") of Artificial Intelligence: Foundations of Computational Agents, 2nd Edition, by David L. Poole and Alan K. Mackworth.

RICE Deadline & Assignments

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 5 October (12:30PM - 01:50PM)

Game Tree Search

Read Game Search, Minimax, and Alpha Beta Pruning, by Jing Li and Melissa Gymre, *The Mathematics of Toys and Games*, 2009. (Massachusetts Institute of Technology: MIT OpenCouseWare), http://ocw.mit.edu (Accessed August 27, 2017). License: Creative Commons BY-NC-SA.

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 10 October (12:30PM - 01:50PM)

October Break: No Class

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 12 October (12:30PM - 01:50PM)

Logic & core.logic

Read from the beginning of Chapter 11 through 11.3 (pp. 199-205, "Deductions in Symbolic Logic," "The Situation Calculus," and "Logic Programming") of *The Quest for Artificial Intelligence* by Nils J. Nilsson.

Read A Very Gentle Introduction To Relational & Functional Programming by David Nolen.

Optional: Read the Wikipedia page on Logic Programming.

RICE Deadline & Assignments

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 17 October (12:30PM - 01:50PM)

Portfolios/Demos

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 19 October (12:30PM - 01:50PM)

Existential Risks

Watch the PBS News Hour segment with Nic Bostrom on AI as an existential threat.

Watch Elon Musk and Bill Gates on the Future of A.I.

Read First Evidence That Social Bots Play a Major Role in Spreading Fake News, MIT Technology Review, August 7, 2017.

RICE Deadline & Assignments

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 24 October (12:30PM - 01:50PM)

Community Education Day: No Class

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 26 October (12:30PM - 01:50PM)

AI for the Common Good

Listen to Artificial Intelligence with Oren Etzioni, Software Engineering Daily podcast, August 29, 2016.

Read Teaching A.I. Systems to Behave Themselves, by Cade Metzaug.

Read AI Programs Are Learning to Exclude Some African-American Voices, by Will Knight.

Read UMass Amherst Computer Scientists Develop New Technique to Measure Social Bias in Software, by Janet Lathrop.

Read AI summit aims to help world's poorest, by Declan Butler.

Optional: Read Fairness Testing: Testing Software for Discrimination, by Sainyam Galhotra, Yuriy Brun, and Alexandra Meliou.

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 31 October (12:30PM - 01:50PM)

Planning & Knowledge

Read Sections 11.4 and 11.5 (pp. 205-210, "Semantic Networks," and "Scripts and Frames") of *The Quest for Artificial Intelligence* by Nils J. Nilsson.

Optional: Read Report on a General Problem-Solving Program, by A. Newell, J.C. Shaw, and H.A. Simon.

Optional: Read Scripts, Goals and Knowledge, by Roger C. Schank and Robert P. Abelson.

RICE Deadline & Assignments

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 2 November (12:30PM - 01:50PM)

Evolution

Read Evolution of Artificial Intelligence, by Lee Spector.

Watch Genetic Programming in Clojure, by Lee Spector.

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 7 November (12:30PM - 01:50PM)

Neural Networks

Read Introducing Deep Learning and Neural Networks — Deep Learning for Rookies (1), by Nahua Kang.

Read Deep learning, by Yann LeCun, Yoshua Bengio, & Geoffrey Hinton.

Check out The mostly complete chart of Neural Networks, explained, by Andrew Tchircoff.

Optional: Read Deep Learning for Video Game Playing, by Niels Justesen, Philip Bontrager, Julian Togelius, and Sebastian Risi.

Optional: Read Machine Learning for Humans, by Vishal Maini.

RICE Deadline & Assignments

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 9 November (12:30PM - 01:50PM)

Cortex

Read Functional programming for deep learning, by Joyce Xu.

Read Deep Learning in Clojure With Cortex, by Carin Meier.

Check out Cortex on Github.

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 14 November (12:30PM - 01:50PM)

Portfolios/Demos

RICE Deadline & Assignments

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 16 November (12:30PM - 01:50PM)

Climate

Read How machine learning could help to improve climate forecasts, by Nicola Jones.

Read What can a technologist do about climate change?, by Bret Victor.

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 21 November (12:30PM - 01:50PM)

Art, Music, and Language

Listen to Doug Eck – Expressive AI-Generated Music with Google's Performance RNN.

Check out Magenta and Performance RNN: Generating Music with Expressive Timing and Dynamics, by Ian Simon and Sageev Oore.

Check out the Genbebop project.

Optional: Read the Wikipedia page on Natural Language Processing.

Optional: Read The art of algorithms: How automation is affecting creativity, by Paul Sawers.

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 23 November (12:30PM - 01:50PM)

Thanksgiving: No Class

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 28 November (12:30PM - 01:50PM)

AI and the future of work

Read The Real Threat of Artificial Intelligence, by Kai-Fu Lee.

Read A World Without Work, an interview with Moshe Vardi by Michael Abrams.

Optional: Watch Humans, Machines, and Work: The Future is Now, by Moshe Vardi.

RICE Deadline & Assignments

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 30 November (12:30PM - 01:50PM)

The Future of Science and Medicine

Read A New Kind of Science: A 15-Year View, by Stephen Wolfram.

Read Automating Scientific Discovery, by Neil Savage.

Read Self-taught artificial intelligence beats doctors at predicting heart attacks, by Matthew Hutson.

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 5 December (12:30PM - 01:50PM)

Project Work

RICE Deadline

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 7 December (12:30PM - 01:50PM)

Project Work

Add an activity or resource

Add a resource... Add an activity...

Edit

Tuesday, 12 December (12:30PM - 01:50PM)

Final Demos

Add an activity or resource

Add a resource... Add an activity...

Edit

Thursday, 14 December (12:30PM - 01:50PM)

Final Demos, Final Portfolios Due

Last Class

Add an activity or resource

Add a resource... Add an activity...
