
PHIL 3350A: ROBOT ETHICS

(PHILOSOPHY, ETHICS AND PUBLIC AFFAIRS)

FALL 2014

INSTRUCTOR INFORMATION

Prof: Jason Millar

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Office: Paterson 3A39

Office Hours: Thursdays 12:00 – 1:00

pm

Contacting Me (your prof): I encourage you to contact either myself, or the course TAs, with any questions or concerns. The best way to get in touch with me is email. **Be sure to include the following text in ALL emails or I cannot guarantee your email will get through my filters: “PHIL 3350”.**

COURSE INFORMATION

Time: 6:05 – 8:55pm, Mondays (Sept. 08 – Dec. 08 2014)

Location: TBA

Course Website: I’ll be using CULearn for this course. You should check it regularly (at least once a week, probably more) for important messages, scheduling information, readings, assignment or exam information, and other important information. You will be responsible for keeping current with the information on CULearn.

Course Hashtag: #CUphil3350 ; This will be used for posting optional questions or comments during class via Twitter.

COURSE DESCRIPTION

In 2007 Bill Gates predicted that robotics and automation would be the next revolution in technology, rivaling that of the personal computer. His prediction is well on its way to being validated. Global investment in robotics and automation technology (robotics hereafter) is growing rapidly in all areas of the economy including: healthcare, manufacturing, consumer electronics, entertainment, military, transportation, and public safety. The global medical robotics market is predicted to grow from a value of \$5.48B in 2011 to an estimated \$13.6B by 2018, with surgical robots enjoying the greatest share. According to the Teal Group, worldwide annual spending on unmanned aerial vehicles (UAVs) will double over the next decade to \$11.5B from the current \$6.4B, totaling \$91B in spending. To put this in perspective, Amazon recently announced its interest in using UAVs to deliver some of its billions of annual orders directly to your front door. Google recently made headlines when it purchased a collection of the world’s leading robotics and artificial intelligence companies for an estimated \$4B. IBM’s multi-billion dollar supercomputer, called Watson, appeared on the game show Jeopardy!, easily defeating the two reigning human Jeopardy! champions while ushering in the age of the “expert robot”. Watson is now being used in healthcare, the military, and other business sectors. MIT professor Cynthia Breazeal recently announced her new robot, Jibo, which she is calling “the world’s first family robot”. Jibo has since broken records by raising over \$1M in the first week of its IndieGoGo crowdfunding campaign. Google and most major automobile manufacturers are designing autonomous (driverless) cars, some of which are already sharing the

roads with us. Autonomous car technology is progressing so quickly that *Wired* declared that by the year 2040 you will no longer need a driver's license. It is no surprise given these headlines that, for the first time on November 12 of last year, a robot rang the closing bell on the NASDAQ in celebration of the success of ROBO-STOX, a new index benchmarking the robotics industry. These are but a sample of the daily news headlines that robotics technologies are enjoying. No longer science fiction or the stuff of speculation, the robots are here.

Robots are challenging many of our philosophical and ethical notions while suggesting the need for new public policy. Recent revelations regarding the United States' military drone program has prompted widespread international discussions on "robot ethics" as a means of anticipating the ethical challenges associated with pursuing various robot technologies and deploying them in, and across, societies. A recent international Campaign to Stop Killer Robots was launched with wide press coverage following the release of a UN report on lethal autonomous robots. Recently, academic institutions worldwide have held major workshops (e.g. robots.law.miami.edu) and are publishing more and more on the field of the social implications of robotics. It is an exciting time to study the social implications of robotics!

What is a robot? What is technology? How should we think about technology? What role does design ethics play in the making of robots and of society? Can robots have moral agency? What would that agency look like? What are the current directions in robot ethics, and robot design, and are they adequate/justifiable? What kinds of relationships ought we to encourage between robots and humans, or robots and robots? What norms, if any, ought to be considered with respect to governing the design of, and interaction with, robots? What might we owe robots in the future?

The goal of this course is to investigate the above questions through an examination of classic and contemporary texts in ethics, philosophy of mind, science and technology studies, public policy, and a newly emerging area called "robot ethics". Students will be challenged to consider how philosophical concepts including identity, consciousness, moral agency, personhood, artificial intelligence, and rationality apply to robot ethics. As this course focuses on ethics and policy issues, an emphasis will be placed on examining and developing normative claims for use in policy contexts from the course literature. By engaging public policy documents students will also have an opportunity to examine and critique the application of philosophical concepts in the context of interdisciplinary technology debates.

COURSE LEARNING OBJECTIVES

Upon successful completion of this course, students will be able to:

1. Explain some of the key issues in robot ethics.
2. Critique course readings using clear argumentation.
3. Justify particular ethical positions using clear argumentation.
4. Compare course readings with reference to key issues in robot ethics.
5. Compare policy options in order to formulate policy recommendations.
6. Analyze the social implications of particular technologies using one of the methods introduced in the course.

COURSE TEXT

There is no required textbook for this course. Course readings will be posted and available on cuLearn, either in document form, or via hyperlink.

PEDAGOGY

This course does not require any previous training in technology, robotics, or philosophy. The course will consist of a combination of interactive lectures and regular in-class activities and discussions. In addition to the readings a variety of sources will be engaged throughout the course including sci-fi literature, movies, print media and television for framing discussions. Students will be encouraged to draw on all sources to participate in regular in-class discussions and are expected to have completed all readings prior to class.

My goal is to create a highly interactive learning environment. Formal lectures will be discouraged in place of discussions and in-class peer teaching/learning activities such as discussions, debates, and very short presentations. The course has been designed to provide you opportunities to ask questions to the prof and the authors whom you will be studying, as well as to engage the readings critically on a regular basis, in order to get the most out of the course.

STUDENT EVALUATION

- 1) **2 Policy Briefs (2 x 35% of overall course grade):** Students will be required to submit two written policy briefs. Details will be distributed in class.
- 2) **In-Class “Teaching” Debate (30% of overall course grade):** Students will complete this assignment in groups of three to four students (3-4). Each group of students will select one of the weekly readings and prepare a 10-minute introduction to the paper, a 5-minute debate to present in front of the class, and a 10-minute guided Q&A session with the class. Details will be distributed in class.

All written assignments must include a standard cover sheet (see the attached document titled “Department of Philosophy and Carleton University Policies”). Assignments must be **double spaced, using a standard 10-12 pt. font (Times New Roman, Arial, Calibri or Cambria)**. Assignments that exceed the maximum word count will be subject to a grade reduction of 5%.

Students must use proper, consistent citations in all written assignments. The preferred styles are APA or Chicago, and all citations must include: Author; Date; Title; Journal Title (if applicable); Journal Volume and Number (if applicable); City and Publisher (for books); Page(s) (for ALL quotes).

Assignments must be handed in **no later than 6:05pm on the day they are due**, or they will be considered late. There will be no exceptions to this deadline. Please refer to the “Department of Philosophy and Carleton University Policies” document for guidelines regarding “Deferrals for Term Work”, “Plagiarism”, and “Academic Accommodation”. The university guidelines will be strictly enforced in this course.

Late assignments will be penalized 10% per day.

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

HELP WITH CULEARN

This course uses cuLearn, Carleton’s online learning management system. To access your courses on cuLearn go to <http://carleton.ca/culearn>.

For help and support, go to <http://carleton.ca/culearn/students>. Any unresolved questions can be directed to Computing and Communication Services (CCS) by phone at 613-520-3700 or via email at ccs_service_desk@carleton.ca.

CLASS SCHEDULE:

Week 1 (Sept. 8): Setting the Scene: An Intro to Robot Ethics

1. Class Introduction: Course Syllabus and Reading List
2. Lin, P., Abney, K., Bekey, G. (2011). "Robot Ethics: Mapping the Issue for a Mechanized World." *Artificial Intelligence* 175(5-6):942-949.

Week 2 (Sept. 15): What's So Special About Robots?

3. Calo, R. (2015). "Robotics and the New Cyberlaw." *California Law Review* 103. Online: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2402972

Week 3 (Sept. 22): The Imitation Game

4. Turing, A.M. (1950). "Computing Machinery and Intelligence." *Mind* 59:433-460. Available at: <http://loebner.net/Prizef/TuringArticle.html>
5. Searle, J.R.. (1980). "Minds, Brains, and Programs." In John Haugeland (Ed.) *Mind Design II: Philosophy, Psychology, Artificial Intelligence*. (Cambridge, Mass.: MIT Press, 1997). 183 – 204. Online at <http://cogprints.org/7150/1/10.1.1.83.5248.pdf>

Week 4 (Sept. 29): Social Robots – Rights and Personhood

6. Selections from Leiber, J. (1985). *Can Animals and Machines Be Persons? – A Dialogue*. (Hackett Publishing Company). (Read: Intro; Setting; The First Morning; The Afternoon)
7. Sparrow, R. (2011). "Can Machines be People? Reflections on the Turing Triage Test." Available at: <http://profiles.arts.monash.edu.au/rob-sparrow/files/2012/10/can-machines-be-people.pdf>

Week 5 (Oct. 6): Evaluating Technology I

8. Latour, B. (1992). "Where Are the Missing Masses? The sociology of a few mundane artifacts." In Wiebe E. Bijker and John Law (eds.). *Shaping Technology/Building Society: Studies in Sociotechnical Change*. (Cambridge, Mass.: MIT Press)

Week 6 (Oct. 13): Thanksgiving – No Classes

Week 7 (Oct. 20): Evaluating Technology II

9. **1st Policy Brief (due at beginning of class)**
10. Verbeek, P.P. (2006). "Materializing Morality: Design Ethics and Technological Mediation." *Science, Technology & Human Values* 31. 361-380.

Week 8 (Oct. 27): Fall Break – No Class

Week 9 (Nov. 3): Autonomous Cars

11. Millar, J. (2014). "Technology as Moral Proxy: Autonomy and Paternalism by Design." *IEEE Intl. Symp. on Ethics in Eng. Sci. and Tech*. Online: <https://ethicstechnologyandsociety.files.wordpress.com/2014/06/millar-technology-as-moral-proxy-autonomy-and-paternalism-by-design.pdf>
12. Millar, J. (2014). "Should Your Robot Car Kill You to Save a Child's Life?" *The Conversation*. (Aug 1). Online: <https://theconversation.com/should-your-robot-driver-kill-you-to-save-a-childs-life-29926>

13. Lin, P. (2014). "Here's a Terrible Idea: Robot Cars With Adjustable Ethics Settings." *WIRED*. (Aug 18). Online: <http://www.wired.com/2014/08/heres-a-terrible-idea-robot-cars-with-adjustable-ethics-settings/>

Week 10 (Nov. 10): Expert Robots

14. Millar, J. & Kerr, I. (forthcoming). "Delegation, Relinquishment, and Responsibility: The Prospect of Expert Robots." In R. Calo, M. Froomkin, I. Kerr (Eds.) *Robot Law*. (Northampton: Edward Elgar).
15. Kerr, I. & Mathen, C. (2014). "Chief Justice John Roberts is a Robot." *We Robot 2014*. Online: <http://robots.law.miami.edu/2014/wp-content/uploads/2013/06/Chief-Justice-John-Roberts-is-a-Robot-March-13-.pdf>

Week 11 (Nov. 17): Movie Night

16. To be selected democratically by class vote: "Robot & Frank" vs. "Her"

Week 12 (Nov. 24): Love and Sex with Robots I

17. Yeoman, I., Mars, M.. (2012). "Robots, Men and Sex Tourism." *Futures* 44(4):365-371.
18. Levy, D. (2007). "Robot Prostitutes as Alternatives to Human Sex Workers." Available at: <http://www.roboethics.org/icra2007/contributions/LEVY%20Robot%20Prostitutes%20as%20Alternatives%20to%20Human%20Sex%20Workers.pdf>

Week 13 (Dec. 1): Military Robots I

19. CBC. (2011). *Remote Control War*. Doc Zone Documentary.
20. UN. (2013). *Report on Lethal Autonomous Robots*. Available at: http://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session23/A-HRC-23-47_en.pdf

Week 14 (Dec. 8): Military Robots II – The Campaign to Stop Killer Robots

21. **2nd Policy Brief (due at beginning of class)**
22. Human Rights Watch and ICRC. (2014). *Advancing the Debate on Killer Robots: 12 Key Arguments for A Preemptive Ban on Fully Autonomous Weapons*. (Human Rights Watch). Online: http://www.hrw.org/sites/default/files/related_material/Advancing%20the%20Debate_final.pdf

Department of Philosophy and Carleton University Policies (2014-15)**Assignments:**

Unless specifically told otherwise by their instructors, students:

- must not use a plastic or cardboard cover or paper clips
- must staple the paper (there is a stapler on the essay box)
- must include the following:
 - student name
 - student number
 - course number and section
 - instructor's name
- The Philosophy Department does not accept assignments by FAX. You may send them by courier, if necessary.
- No assignments will be accepted after the last day for handing in term work – see dates in next column.
- Assignments handed in through the essay box (just inside the glass doors, Paterson Hall, Floor 3A) must be dropped into the box by **4:15** on a regular business day in order to be date-stamped with that day's date. Assignments handed in after 4:15 or on a non-business day will be stamped as having been handed in on the next business day.
- Students are required to keep copies of their assignments. If your paper is lost at any point, you will be considered not to have submitted it if you cannot produce a copy immediately on request.

Deferrals for Term Work:

If you miss a final examination and/or fail to submit a final assignment by the due date because of circumstances beyond your control, you may apply for a deferral of examination/assignment. For deferred examinations, you must apply within 5 working days after the scheduled date of your exam. To apply for deferral of a final assignment, you must apply within 5 working days of the last scheduled day of classes. Visit the Registrar's Office for more information.

Plagiarism:

It is the responsibility of each student to understand the meaning of 'plagiarism' as defined in the Undergraduate or Graduate Calendars, and to avoid both committing plagiarism and aiding or abetting plagiarism by other students. (Undergraduate Calendar Academic Regulations, section 14.3, or <http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/acadregsuniv14/>)

Academic Accommodation:

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to your professor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>

Religious obligation: write to your professor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>

Academic Accommodations for Students with Disabilities: The **Paul Menton Centre** for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send your **Letter of Accommodation** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). After requesting accommodation from PMC, meet with your professor to ensure accommodation arrangements are made. Please consult the PMC

website for the deadline to request accommodations for the formally-scheduled exam (*if applicable*) at

<http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/>

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://www2.carleton.ca/equity/>

Important Dates:

Sept. 4	Classes start (after Orientation events).
Sept. 17	Last day for registration and course changes in Fall and Fall/Winter courses.
Sept. 30	Last day for entire fee adjustment when withdrawing from Fall term or two-term courses.
Oct. 13	Thanksgiving Day – university closed.
Oct. 27-31	Fall Break – no classes.
Nov. 24	Last day for tests or examinations in courses below 4000-level before the Final Examination period.
Dec. 8	Last day of classes, Fall term. Last day for handing in term work and the last day that can be specified by a course instructor as a due date for Fall term courses.
Dec. 8	Last day to withdraw from Fall term courses (academic purposes only).
Dec. 9	No classes or examinations take place. Review classes may be held, but no new material may be introduced.
Dec. 10-21	Final examinations for Fall courses, mid-terms for Fall/Winter courses.
Dec. 21	Take-home exams are due.
Jan. 5	Winter term classes begin.
Jan. 16	Last day for registration and course changes in Winter term classes.
Jan. 31	Last day for entire fee adjustment when withdrawing from winter courses or winter portion of two-term courses.
Feb. 16-20	Winter Break, classes suspended.
Mar. 24	Last day for tests or examinations in courses below 4000-level before the Final Examination period.
Apr. 8	Last day of Fall/Winter and Winter term classes. Last day for handing in term work and the last day that can be specified by a course instructor as a due date for term work for Fall/Winter and Winter term courses.
Apr. 8	Last day to withdraw from Fall/Winter and Winter term courses (academic purposes only).
Apr. 9-10	No classes or examinations take place. Review classes may be held, but no new material may be introduced.
Apr. 11-23	Final Examinations. Exams are normally held all seven days of the week.
Apr. 23	Take-home exams are due.

Addresses:

Department of Philosophy:	3A35 Paterson Hall www.carleton.ca/philosophy 520-2110
Registrar's Office:	300 Tory www.carleton.ca/registrar 520-3500
Student Academic Success Centre:	302 Tory www.carleton.ca/sasc 520-7850
Writing Tutorial Service:	4 th Floor, Library http://www1.carleton.ca/sasc/writing-tutorial-service/ 520-6632
MacOdrum Library	http://www.library.carleton.ca/ 520-2735