Assignment 10 – CSC1016S, 2023

Write an essay on ethical issues with robot teachers

1.   Introduction

The use of computers and similar devices in education is far from novel, as is the use of a wide range of software to support teaching. This was brought to the fore even more since the Covid-19 pandemic and also some teachers are wondering whether chatbots based on large language models can make their tasks easier. Perhaps we can even replace teachers with robots. You may assume that South Africa has no laws about robot teachers. Would you advise the government to introduce robot teachers?

2.   Assignment

You are tasked with writing an essay that will answer the question, or an aspect thereof. It is you who has to practice and improve on your academic writing skills, not that you should train ChatGPT or Bard or the like, and so all text appearing in your essay has to have been written by you.

Your argument in the answer to the main question must be *rational* and *reasoned*. You may read any of the sources on the Web, but you must give proper credit to whichever sources you use. Several relevant sources are listed at the end of the assignment description, which include popular news articles on issues, as entry-level exploration, and some technical references. You may also want to refer to your own experience, if it adds to the argument (not be just gut feeling). You also may bring in a moral theory you subscribe to so as to strengthen your argument, if it is relevant to the argument. As computer science students, you should bring to bear your expertise in computing.

You may pick any ethical subtopic of robot teachers to zoom in on so as to focus the argument. Some examples are as follows, but you are free to choose another subtopic:

- Is it ethical to store everything that the learner says to the teacher, for an indeterminate amount of time, and that the organisation providing the robot teachers can do with the voice recordings what they want? Would such recordings be acceptable as evidence in a criminal investigation? Is a self-learning feature of the robot—say, for learning the learners' daily routine—good to build into the robot? Put differently: *where are the privacy boundaries for a robot teacher, if any?*

- Robot teachers can easily be equipped also with additional features, such as being a smoke detector. *Should it act autonomously upon input?* For instance, to start the fire alarm and snitch on a dagga-smoking learner in class or otherwise punish a learner, and whatever other decision that is not a pre-coded rule but may be based on typical collective user behaviour in such situations or based on software agent negotiations. Conversely: should it only passively respond on the user's instructions, but not make any decisions of its own?
- Since the majority of school teachers are female, should the robot teacher's voice then also always be set to a female-sounding voice? It could be argued that this exacerbates gender stereotyping. Is this problematic? Are the human-computer interaction design choices simply reflecting preference of the presumed majority of users, or the social practices? If so, is it always good to tailor the computer-human interaction configuration to the expected majority of users or current state of affairs? *Should gender, or any other demographic feature, be a factor in human-computer interaction design of a robot teacher?*

3.   Instructions

Look at the marking guide below. Do not throw away marks by failing to adhere to acceptable standards! The UCT Writing Centre (http://www.writingcentre.uct.ac.za/) provides help with writing (free of charge!), should you have difficulties. They also will give a presentation on essay writing, which will be by 1 October latest. You may also find some useful guides on their website; click on the tab labelled "Improve Your Writing".

- Write in a readable fashion in a tone appropriate for an academic document.
- You may use an active voice and the first person if you wish.
- Your success will depend on a developed, rational argument.
- The paper should be well structured and you should marshal arguments and evidence.
- Draw conclusions based on evidence.
- Use the Harvard/APA or ACM/IEEE referencing style (e.g., http://library.queensu.ca/book/export/html/5846).
- Text processing software can do reference management for you (e.g., Endnote, Bibdesk)
- Several text processing software applications, such as OpenOffice and MS Word, have built-in spelling and grammar checkers, which generally are useful.

Maximum Length: 2000 words.

Format: PDF, 12pt serif (e.g., Times New Roman), A4 paper, 2.5 cm margins, 1 or 1.5 line spacing.

Submit your paper via the Assignments tool on Vula. *Do not submit to the Automatic Marker.*
   Do not zip the file, it must be a pdf file. **It will be checked on plagiarism by Turnitin.**

4.   Marking Guide

These are the categories for marks. Although they largely reflect the logical structure of your paper, and items 2-6 can be taken for suggestive of subsections or paragraphs, you do not need to have exactly this structure, provided the points are covered. It is not easy to get marks for item number 7 in the table below. If your arguments are superficial you will get zero (we did check it against ChatGPT and the arguments it returns are superficial). Higher marks will be gained for reflective and strategic arguments.

	1.	Language, style & overall presentation (appropriate for an academic paper)	15
	2.	Introduction and motivation	10
	3.	Presentation of evidence, factual accuracy, relevance	20
	4.	Critical analysis, logical soundness of the arguments (pros and cons, importance/weighting on them)	20
	5.	Conclusion and Recommendations	15
	6.	Suitable referencing	5
	7.	Originality, significance, innovative ideas, depth of ideas	10
	8.	Mention of an ethical issue raised in "Melokuhle" is used in the critical analysis (as in: it does/does not apply to roboteachers, and why)	5
		Total Marks	*100*

5.   FAQ

Previous instalments of the essay assignment raised recurring questions, which are reproduced here with answers.

Is Assignment 10 (the essay) compulsory?
No. All CSC1016S assignments are not compulsory.

What is the weighting of Assignment 10?
The same as all the other assignments; RTCN for the Duly Performed calculations.

Does the essay really have to be 2000 words long?
No. 2000 words is the very maximum. If you can make your argument in fewer words, that fine. It's the substance that counts; see also the marking guide in the assignment description.

If I write it, which question should I answer/discuss?
There are sample questions in the assignment description, a few more will be mentioned in the lectures, and yet more are included in the notes. Pick one in an area that sounds at least somewhat interesting to you.

Must I say something about a moral theory and Robot teachers?
You may, but need not to (see assignment instructions).

Can I get an extension on Assignment 10?
No. The end of semester has some very tight deadlines due to manual marking constraints. There is an option of late submissions, with the usual penalty policy.

How do I access scientific articles from home/when I'm not using Eduroam?
Use ezproxy.uct.ac.za (ezproxy.uct.ac.za/menu) to give you documents that are restricted to access from a UCT IP address (these include the ACM digital library (dl.acm.org.ezproxy.uct.ac.za/) and the IEEE library (ieeexplore.ieee.org.ezproxy.uct.ac.za/). Use www.lib.uct.ac.za.ezproxy.uct.ac.za/ to access the library from home. When looking for new documents, Google Scholar and either use it directly or through https://scholar-google-co-za.ezproxy.uct.ac.za to simplify your searches. In any case, do NOT pay for a document. Many articles are available through the university's library using the ezproxy or eduroam. They also may be available through the author's website (a so-called "camera ready copy", that's the same

in content but not in formatting). Using Scihub is breaking the law; it's up to you to decide for yourself whether you think you're morally in the right to do so anyway (note: as authors of scientific articles, we don't get any royalties on them anyway, so it's not like you'd be depriving us of an extra income).

6.   A few pointers to scientific literature and news articles

This list is intended to help you get started in your literature search and provide a few informal introductions to some of the issues raised with robots in the classroom. They were selected because they cover different topics from different perspectives, are from widely diverse sources, and use different keyword terms (but do not reflect your SIPP lecturer's value judgement of the resources). You are not expected to read them all, and you are expected to find other ones as well (there are plenty). All references are available on Vula, except the two webpages.

Aichinger, A.-S. Robot teachers in the classroom: an ethical evaluation. MSc Thesis, University of Vienna. Fakultät für Philosophie und Bildungswissenschaft. 2017. DOI: 10.25365/thesis.50523

Asimov, I. The fun they had. *The Magazine of Fantasy and Science Fiction,* 1954, 1p. Online available at: http://visual-memory.co.uk/daniel/funtheyhad.html (last accessed: 27-6-2023)

Borgo, S., Blanzier, E. Trait-based Culture and its Organization: Developing a Culture Enabler for Artificial Agents. *IEEE/RSJ International Conference on Intelligent Robots and Systems 2018 (IROS'18)*, 1-5 Oct 2018, Madrid, Spain. IEEE Xplore, 333-338.

Edwards, B.I, Cheok, A.D. Why Not Robot Teachers: Artificial Intelligence for Addressing Teacher Shortage. *Applied Artificial Intelligence*, 2018, 32(4): 345-360. DOI: 10.1080/08839514.2018.1464286.

Ha-Won, J. S. Korea schools get robot English teachers. *Phys.org*, 28 December 2010. https://phys.org/news/2010-12-skorea-schools-robot-english-teachers.html; last accessed: 27 June 2023.

Kim, M. The social robot teacher. *BOLD*, 9 February 2018. Online: https://bold.expert/the-social-robot-teacher/; last accessed: 27 June 2023.

Sharkey, A.J.C. Should we welcome robot teachers? *Ethics Inf. Tech.*, 2016, 18: 283-297.

Smakman, M., Konijn, E.A. Robot Tutors: Welcome or Ethically Questionable? *International Conference on Robotics in Education (RiE'19)*. Springer AISC, vol. 1023, 376-386.

Stoffels, S., Stroud, S.R. Google Assistant and the ethics of AI—case study: the ethics of artificial intelligence in human interaction. *Media Ethics Initiative, Moody College of Communication, University of Texas, USA*, 24 September 2018. Online: https://mediaethicsinitiative.org/2018/09/24/google-assistant-and-the-ethics-of-ai/ (last accessed: 27-6-2023).

Image credits: Stephen Chin, flickr.com (classroom with Neo); https://phys.org/news/2010-12-skorea-schools-robot-english-teachers.html