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ETHICS in AIED: Who Cares?

A **workshop proposal** for the 2018 conference on Artificial Intelligence in Education.

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1. Abstract

The field of AIED raises far-reaching ethical questions with important implications for students and educators. However, most AIED research, development and deployment has taken place in what is essentially a moral vacuum (for example, what happens if a child is subjected to a biased set of algorithms that impact negatively and incorrectly on their school progress?). Around the world, virtually no research has been undertaken, no guidelines have been provided, no policies have been developed, and no regulations have been enacted to address the specific ethical issues raised by the use of Artificial Intelligence in Education.

This workshop, ***ETHICS in AIED: Who Cares?***, is proposed as a first step towards addressing this critical problem for the field. It will be an opportunity for researchers who are exploring ethical issues critical for AIED to share their research, to identify the key ethical issues, and to map out how to address the multiple challenges, towards establishing a basis for meaningful ethical reflection necessary for innovation in the field of AIED.

The workshop will be in three parts. It will begin with ***ETHICS in AIED: What's the problem?***, a round-table discussion introduced and led by Professor Beverly Woolf, one of the world's most accomplished AIED researchers. This will be followed by ***Mapping the Landscape***, in which up to six AIED conference participants will each give a five-minute 'lightning' presentation on ethics in AIED research. The workshop will conclude with ***Addressing the Challenges***, a round-table discussion session in which we will agree on a core list of ethical questions/areas of necessary research for the field of AIED, and will set out to identify next steps.

2. Introduction

While the range of AI techniques and technologies researched in classrooms and discussed at conferences are extensive and growing, the ethical consequences are rarely fully considered (at least, there is very little published work considering the ethics). In short, as a field (while we apply our university research regulations), we are working without any fully-worked out moral groundings specific to the field of AIED.

In fact, AIED techniques raise an indeterminate number of self-evident but as yet unanswered ethical questions. To begin with, concerns exist about the large volumes of data collected to support AIED (such as the recording of student competencies,

emotions, strategies and misconceptions). Who owns and who is able to access this data, what are the privacy concerns, how should the data be analysed, interpreted and shared, and who should be considered responsible if something goes wrong?

However, while data raises major ethical concerns for the field of AIED, AIED ethics cannot be reduced to questions about data. Other major ethical concerns include the potential for bias (conscious or unconscious) incorporated into AIED algorithms and impacting negatively on the civil rights of individual students (in terms of gender, age, race, social status, income inequality...). But these particular AIED ethical concerns, centred on data and bias, are the 'known unknowns'. What about the 'unknown unknowns', the ethical issues raised by the field of AIED that have yet to be even identified?

AIED ethical questions include:

- What are the criteria for ethically acceptable AIED?
- How does the transient nature of student goals, interests and emotions impact on the ethics of AIED?
- What are the AIED ethical obligations of private organisations (developers of AIED products) and public authorities (schools and universities involved in AIED research)?
- How might schools, students and teachers opt out from, or challenge, how they are represented in large datasets?
- What are the ethical implications of not being able to easily interrogate how AIED deep decisions (using multi-level neural networks) are made?

Strategies are also needed for risk amelioration since AI algorithms are vulnerable to hacking and manipulation. Where AIED interventions target behavioural change (such as by 'nudging' individuals towards a particular course of action), the entire sequence of AIED enhanced pedagogical activity also needs to be ethically warranted. And finally, it is important to recognise another perspective on AIED ethical questions: in each instance, the *ethical cost of inaction and failure to innovate* must be balanced against the potential for AIED innovation to result in real benefits for learners, educators and educational institutions.

3. Target audience

Given that all AIED work raises ethical questions, the ***ETHICS in AIED: Who Cares?*** workshop will be of relevance to all AIED 2018 conference participants (i.e., it will be open to everyone involved in the research, development or deployment of Artificial Intelligence in Education). Attendees will be invited to propose five-minute 'lightning presentations' (of which six will be chosen for the workshop).

4. Organization plan

The half-day **ETHICS in AIED: Who Cares?** workshop will comprise:

Part 1: **ETHICS in AIED: What's the problem?**

(round-table discussion, introduced and led by Professor Beverly Woolf).

Part 2: **ETHICS in AIED: Mapping the Landscape**

(up to six AIED conference participants to each give a five-minute 'lightning' presentation on ethics in AIED research, each of which will be followed by a five-minute Q&A/discussion).

Part 3: **ETHICS in AIED: Addressing the Challenges**

(round-table discussion, clarifying AIED ethical questions and areas of important research, and identifying next steps: an initial road map or targets).

5. Expected outcomes

Expected take-away for the audience:

As the first AIED workshop devoted to this key topic, **ETHICS in AIED: Who Cares?** will also serve as community-building event. Participants will be expected to leave with a clearer understanding of ethical issues central to AIED, and how they might contribute towards addressing the challenges.

Expected contribution of the workshop to the AIED community:

The workshop will help us begin to develop a shared understanding of the multiple challenges and points of contention around the ethics of AIED, that we can draw on when developing and researching AIED technologies. The ambition is that this will be the first of a series of meetings through which the community builds a firm ethical foundation for our work.

6. Indicative references

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7. Workshop organisers

Dr Wayne Holmes is a Lecturer in the Institute of Educational Technology at the Open University, UK, where he is PI on two projects (*Data-informed Learning Design for Future Schools* and *Technology-enhanced Personalised Learning*) and Co-I on two EU-funded projects (*TeSLA* and *CODUR*). He has been involved in education and educational technology for more than 25 years, receiving his PhD in *Education (Learning and Technology)* from the University of Oxford. He also has degrees in Philosophy (MA) and Education (MSc Oxon). His research interests are in the learning sciences, AIED, formative feedback, ethics and educational technologies and design-based research.

Dr Duygu Bektik is a postdoctoral research associate in the Institute of Educational Technology, Open University UK. Over the last 10 years, she has been studying in the fields of computer science, instructional technologies and education. She holds BA (1st) and MA (1st) degrees in *Computer and Instructional Technology Teacher Education* from the Bilkent University, Turkey, MSc (Distinction) in *Software Engineering* from University of Southampton, UK and a PhD in *Learning Analytics* from the Open University, UK. Her current research looks at the relationship between humans and machines and ways of resolving the ongoing tensions around ethical issues.

Professor Denise Whitelock has over twenty years' experience in designing, researching and evaluating online and computer-based learning in Higher Education. She is Professor of *Technology Enhanced Assessment and Learning* in the Open University's Institute of Educational Technology, where she leads the UK's contribution to the EU-funded *TeSLA* and *CODUR* projects. Recently, she has completed the *SAFeSEA* project, the aim of which was to provide effective automated interactive feedback system for university students writing essays in a distance or e-learning context. Her work has received international recognition, and she holds visiting chairs at the Autònoma University, Barcelona and the British University in Dubai.

Professor Beverly Park Woolf, PhD, is a Research Professor in the College of Information and Computer Sciences of the University of Massachusetts Amherst, and Director of the Center for Knowledge Communication. Her research focuses on building systems to effectively train, explain and advise users. Extended multimedia capabilities are integrated with knowledge about the user, domain and dialogue to produce real-time performance support and on-demand advisory and tutoring systems. The tutoring systems use intelligent interfaces, inferencing mechanisms, cognitive models and modifiable software to improve a computer's communicative abilities. These systems have been tested with learners, trainers and deployed in education and industry.