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Ethics in AIED: Who cares?

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ETHICS in AIED: Who Cares?

A **workshop proposal** for the 2019 conference on Artificial Intelligence in Education.

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1. Abstract

The 2018 AIED conference workshop *ETHICS in AIED: Who Cares?* was an important but only a first step towards addressing the far-reaching ethical questions raised by the field of AIED. The reality is that, although there are encouraging signs, most AIED research, development and deployment continues to take place in what is essentially a moral vacuum. In short, still today, little 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 application of AI in educational contexts.

For these reasons, for the AIED 2019 conference, we are proposing a second *ETHICS in AIED: Who Cares?* workshop. This will build on the outcomes of the first workshop (which includes a journal paper and commissioned book proposal). It will be an opportunity for researchers who are exploring AIED ethical issues to share their insights, to identify key ethical issues, to map out how to address the multiple challenges, and to inform best practice. The overarching aim will be to help establish a basis for meaningful ethical reflection necessary for innovation in AIED.

The workshop will begin with "ETHICS in AIED: What's the problem?", presentations by Professors Beverly Woolf and Rose Luckin. This will be followed by "Addressing the Challenges", round-table small-group discussions, each triggered by an ethics vignette or a provocative statement; and then "Mapping the Landscape", in which up to five AIED conference participants will each give a five-minute 'lightning' presentation on an ethics in AIED research issue with which they have been engaging. The workshop will conclude with a whole-workshop discussion considering what Ethics in AIED 2025 will look like. A core outcome for this workshop will be to identify and propose Ethics in AIED policy for the International AIED Society and future AIED conferences to address.

2. Introduction

While the range of AI techniques and technologies researched in classrooms and discussed at conferences continues to grow, the ethical consequences are rarely fully considered – at least, while there is much ethics research for AI in general, there is very

little published work considering the ethics of AIED in particular. In short, as a field (while we apply our university research regulations), we are continuing to work without any fully-developed moral groundings specific to AIED.

In fact, as the AIED community is aware, the field of AIED raises an indeterminate number of 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, and who should be considered responsible if something goes wrong?

Other major ethical concerns centre on AIED computational approaches. How should the data be analysed, interpreted and shared? How should the biases (conscious or unconscious), that might impact negatively on the civil rights of individual students, be remedied – especially given that the scale of AIED in the coming years is likely to amplify any design biases (e.g. about gender, age, race, social status, income inequality…)?

However, and this is all too often ignored, the ethics of AIED cannot be reduced to questions about data or computational approaches. AIED research also needs to account for the ethics of **education** (which, although the subject of decades of research, is most often overlooked). For example, AIED research needs to address the fact that many of its educational assumptions are contested by the learning sciences community.

All that said, the ethics of data, computational approaches, and education are the 'known unknowns'. But what about the 'unknown unknowns', the ethical issues raised by AIED – i.e., at the intersection of data, computation and education – that have yet to be even identified?

Ethics in AIED 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 many ITS and other AIED approaches adopting an instructionist approach to learning?

- 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. And 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, and will be open to, all AIED 2019 conference participants (i.e., 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 five will be chosen for the workshop).

4. **Organization plan**

Building on the organization of the successful workshop in 2018, the 2019 half-day ***ETHICS in AIED: Who Cares?*** workshop will comprise an introduction and four parts:

Intro: **Welcome and Introduction**
Wayne Holmes will welcome participants and will briefly summarise the outcomes of the first ***Ethics in AIED: Who Cares?*** workshop (held at AIED 2018).

Part 1: **ETHICS in AIED: What's the problem?**
Presentations by Professors Beverly Woolf and Rose Luckin, highlighting some key ethics in AIED issues, looking at what has happened since last year, and considering where we are now.

Part 2: **ETHICS in AIED: Addressing the Challenges**
Round-table small-group discussions, each triggered by an ethics vignette or a provocative statement, and reported back to the main workshop.

Part 3: **ETHICS in AIED: Mapping the Landscape**
Up to five AIED conference participants to each give a five-minute 'lightning' presentation on an ethics in AIED research issue in which they have engaged.

Part 4:   **Envisioning ETHICS in AIED 2025**
A whole-workshop discussion considering what Ethics in AIED 2025 will look like (what issues need to be overcome, what new ethical issues might arise, which stakeholders need to be involved). The overarching aim will be to identify and propose ethics in AIED policies for the International AIED Society and future AIED conferences to address.

5. Expected outcomes

Expected take-away for the audience:

As the second AIED workshop devoted to this key topic, ***ETHICS in AIED: Who Cares?*** will again serve as a 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 for the future of ethics in AIED.

Expected contribution of the workshop to the AIED community:

The workshop will help us further 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. As the second of a series of workshops through which the community will further build a firm ethical foundation for our work, the aim is that it will inform policy for the International AIED Society and future AIED conferences.

6. Indicative references

Holmes, W., Bektik, D., Woolf, B., Bosch, N., Doroudi, S., Howley, I., Sharples, M., Zhoue, T. and Shenge, H. (submitted). *Ethics in AIED: Who Cares?* Learning, Media and Technology (Special Issue).

Holmes, W., Bialik, M. and Fadel, C. (2019). *Artificial Intelligence in Education. Promise and Implications for Teaching and Learning.* Boston: Center for Curriculum Redesign.

Luckin, R., Holmes, W., Forcier, L. and Griffiths, M. (2015). *Intelligence Unleashed. An Argument for AI in Education*. London: Pearson.

Woolf, B. (2010). *Building Intelligent Interactive Tutors: Student-Centered Strategies for Revolutionizing e-learning*. Burlington, MA: Morgan Kaufmann.

7. Workshop organisers

Dr Wayne Holmes is an Assistant Professor in *Learning Sciences and Innovation*, at the Institute of Educational Technology, The Open University in the UK (OU). He holds a PhD in *Learning and Technology* from the University of Oxford, an MSc in *Education* and an MA in *Philosophy*. At the OU, he leads on AIED with a particular focus on its ethical and

social implications. He is also a member of the UK's *All Party Parliamentary Group for Artificial Intelligence (Education Taskforce)*. Currently, he is advising UNESCO and the UK's Department for Education on AI in education. He is also the co-author of two reports and a book about AIED: *Intelligence Unleashed: An Argument for Artificial Intelligence in Education* (2016), *Technology-enhanced Personalised Learning: Untangling the Evidence* (2018), and *Artificial Intelligence in Education. Promise and Implications for Teaching and Learning* (2019).

Dr Duygu Bektik is an Assistant Professor in the Institute of Educational Technology, Open University UK. Over the last 10 years, she has been studying and working 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 PhD in *Learning Analytics* from the Open University, UK. She co-runs the openAIED which is a special interest group bringing together researchers across the Open University who are interested in the application of Artificial Intelligence in Education (AIED). Her current research looks at the relationship between humans and machines and ways of resolving the ongoing tensions around ethical issues.

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.

Professor Rose Luckin, PhD, is a Professor in the UCL Knowledge Lab, University College London. Her research focuses on