Machine Learning for Digital Education and Assessment Systems (MLDEAS)

ICML 2016 Workshop

New York City, June 23, 2016

Link to the ICML 2016 Conference Workshops: http://icml.cc/2016/?page_id=1519

Link to the MLDEAS Workshop: http://medianetlab.ee.ucla.edu/ICML-Education2016.html

CALL FOR PAPERS

Submissions due May 1, 2016

Summary

The focus of this workshop is on multidisciplinary research in the area of machine learning to enable new forms of digital education and assessment tools.

The society is interested in redesigning learning and assessment systems (LAS) and not merely improving the systems we have. The educators request assessments that reflect the way people actually teach, learn and work, and that are merged with the learning experience. There is a renewed interest in performance assessments that are individualized and adaptive and efforts are being made to develop these complex assessments in virtual settings. Traditional assessments are unable to address certain questions about why students perform as they do, and are unsuited to assessing important constructs like collaboration. The desire to create better LASs which can provide actionable evidence to improve students' skills and shape educational policies combined with recent advances in technology have led to the proliferation of virtual systems. These systems have the potential to be better suited to provide the additional feedback and information needed, however, virtual LASs come with a number of psychometric and operational challenges that must be addressed if they are to realize their potential as formative assessment tools. Recent advances in machine learning and recent applications of ML algorithms to some educational areas provide new opportunities to address these challenges by collecting and analyzing the data students generate when they interact with a LAS (the little ''Big Data'').

We believe multidisciplinary research and collaboration is key to developing the next generation learning and assessment systems that adapt to student needs and bring the sophistication and pedagogical nuances of a good teacher. This workshop would provide an excellent platform for the sharing of knowledge and ideas across disciplines including computational psychometrics, adaptive learning and testing, and learning analytics, machine learning, computer vision, educational measurement and natural language processing. The research is relevant and timely for advances in educational games, learning and performance assessment simulation systems and collaborative LASs. Our expectation is that by bringing together some of the best minds in these fields we will be able to further the state of the art and generate further interest and excitement in this area.

The applications considered in this workshop include: adaptive learning and testing, analytics, scoring of written essays, collaborative assessments, use of audio and video data in conjunction with the LASs' data (multimodal data), and MOOCs.

Each speaker will present her or his current research and will give a brief overview of the state of the art methods and applications in the speaker's field.

Paper Submission

We invite the submission of papers on all topics related to the application of machine-learning theory and/or algorithms to education, including but not limited to:

- Learning analytics and student modeling
- Content analytics and text mining
- Teaching policy optimization and personalization
- Automatic and peer grading
- The cognitive science of learning
- Data analysis for emerging educational platforms (MOOCs, educational games, etc.)
- Collaborative assessments
- Multimodal behavioral analytics
- Computational psychometrics
- Algorithms for identifying learners' collaborations
- Automating Course/Content/Curriculum Individualization
- Learning analytics with actionable intelligence for instructors

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Submission Instructions

Submissions should follow the regular ICML paper format; there is no page limit. Papers submitted for review do not need to be anonymized. Accepted papers will be made available on the workshop website, since there will be no official proceedings. Accepted papers will be presented either as a talk or as a poster. We welcome submissions with either results that have not been published previously or a summary of the authors' previous work that has been recently published or is under review in another conference or journal. In the interest of spurring the discussion, we also encourage authors to submit extended abstracts and work-in-progress papers with only preliminary results.

Submissions will be judged on their novelty and potential impact in the emerging field of machine learning for education.

Please send your submissions via email to (avondavier@ets.org), (mihaela@ee.ucla.edu) and (richb@rice.edu). Questions about the workshop can be sent to the same e-mail addresses.

Speakers

- [Ryan Baker (Teachers College Columbia University)](#)
- [Emma Brunskill (CMU)](#)
- [Mung Chiang (Princeton University)](#)
- [Andrew Lan (Rice University)](#)
- [Daniel Marcu (USC)](#)
- [Michael Mozer (University of Colorado-Boulder)](#)
- [Jacob Whitehill (Harvard University)](#)
- [Mihaela van der Schaar (UCLA)](#)
- [Richard Baraniuk (Rice University)](#)
- [Alina A. von Davier (Educational Testing Service)](#)

Important Dates

- Submission deadline: May 1, 2016

- Notification: May 10, 2016

- Workshop: June 23, 2016

Organizers

- Alina A. von Davier (Educational Testing Service)
- Mihaela van der Schaar (UCLA)
- Richard Baraniuk (Rice University)