

# The Third Workshop of The Learner Data Institute: Big Data, Research Challenges, & Science Convergence in Educational Data Science

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## 1. WORKSHOP SUMMARY

The Third Workshop of the Learner Data Institute (LDI) builds on the success of two previous, virtual workshops (at EDM 2020 & EDM 2021) and seeks to bring together researchers working across disciplines on data-intensive research of interest to the educational data science and educational data mining communities. In addition to welcoming work describing mature, data-intensive or “big data” research and emerging work-in-progress that spans traditional academic disciplines, the workshop organizers welcome case studies of interdisciplinary research programs and projects, including case studies of learning engineering efforts pursued by universities, learning technology providers, and others (both successful and unsuccessful), as well as position papers on important challenges for researchers harnessing “big data” and crossing disciplinary boundaries as they do so.

We convene researchers and developers from diverse fields who seek to “harness the data revolution” in educational data science and “grow convergence research,” aligning with (at least) two of the U.S. National Science Foundation’s “10 Big Ideas” for emerging research and development opportunities. “Convergence builds and supports creative partnerships and the creative thinking needed to address complex problems” [1], and we expect that bringing together highly experienced researchers, as well as students and early-career researchers, will stimulate substantial growth and interest in state-of-the-art, data-intensive, transdisciplinary or “convergent” approaches to solving vexing societal problems related to education. We also seek to explore the big data and learning engineering frameworks that will enable convergent solutions.

## 2. WORKSHOP AGENDA

The half-day workshop will begin with an introductory talk presenting a summary report of the work of the LDI and situating its progress within the goals of LDI and the broader notion of convergence research for educational data science. Next, Richard Baraniuk (C. Sidney Burrus Professor of Electrical and Computer Engineering, Rice University & Founder and Director, OpenStax) will deliver a keynote talk (including a question-and-answer period and time for discussion). Workshop organizers aim to include four

to six peer-reviewed contributed research papers (“short” 4-6 page papers, as submitted and informed by peer-review decisions) generally concerned with state-of-the-art big data methodology, applications, and research in educational data science and learning engineering, ideally with an emphasis on science convergence, and 1-3 shorter position papers on similar topics, with an eye toward where future research *should* be directed and/or laying out compelling *challenges* for these areas of research. Each contributed paper presentations will be followed by a question-and-answer session. If there is time, a panel discussion will afford the opportunity for keynote speakers and invited guests to interact with workshop attendees, addressing issues related to convergence research and the future of big data in educational research.

## 3. WORKSHOP ORGANIZERS

- Vasile Rus, University of Memphis (Co-Chair)
- Stephen E. Fancsali, Carnegie Learning, Inc. (Co-Chair)
- Dale Bowman, University of Memphis
- Jody Cockroft, University of Memphis
- Art Graesser, University of Memphis
- Andrew Hampton, Christian Brothers University
- Philip I. Pavlik Jr., University of Memphis
- Steven Ritter, Carnegie Learning, Inc.
- Deepak Venugopal, University of Memphis

## 4. ACKNOWLEDGMENTS

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## 5. REFERENCES

- [1] U.S. National Science Foundation. 2017. NSF’s 10 big ideas. [https://www.nsf.gov/news/special\\_reports/big\\_ideas/index.jsp](https://www.nsf.gov/news/special_reports/big_ideas/index.jsp) Last accessed 9 January 2020.

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