

ASSISTments Announces University Winners of MathNet Competition

Three Machine Learning Research Teams Awarded Access to the Largest Dataset of Digitized Student Work.

WORCESTER, MA, UNITED STATES, February 7, 2023 /EINPresswire.com/ -- [ASSISTments](#), a nonprofit organization founded in learning science, recently announced the winners of the first

[MathNet Competition](#) sponsored by Doug Jaffe and Laurence Holt. In conjunction with the MathNet awards, ASSISTments will provide three university machine learning research teams with access to the largest dataset of digitized student work for the purpose of designing AI enabled technology to read, analyze, and score digitized student math work, and provide learning insights to math teachers.



The work of these high-caliber machine learning research teams is critical to improving real-time diagnostic assessment and feedback for math students and teachers.”

Cristina Heffernan, Executive Director of The ASSISTments Foundation



ASSISTments

ASSISTments - Supercharging Data-driven Math Instruction

MathNet Competition grants have been awarded to the following research teams:

Kent State University: PI: Karl W. Kosko, Co-PIs: Dr. Qiang Guan, Dr. Richard E. Ferdig

University of Florida: PI: Dr. Wanli Xing, Co-PIs: Dr. Anthony Botelho, Dr. Jinnie Shin

Worcester Polytechnic Institute: PI: Dr. Neil Heffernan, Co-PIs: Sami Baral, Abhishek Santhanam, Dr. Li Cheng

Grantees will have access to the ASSISTments dataset

which includes over 3 Million images of student work spanning from grade 1 to high school algebra and geometry.

“We envision a future in which K-12 mathematics education products support educators, students, and families with automated analysis of written student work,” commented Cristina Heffernan, Executive Director of The ASSISTments Foundation. “We are thrilled with the high-caliber machine learning research teams and anticipate results that, when applied to the classroom, will improve real-time diagnostic assessment and feedback to students and teachers

completing mathematics tasks.”

“This project keeps the focus on student work completed as part of the math curriculum. These technologies will help educators focus time on the student papers most in need of attention while ensuring that all of the students' work can be considered when assessing how each student in the class is progressing,” commented Doug Jaffe, MathNet Co-Founder.

About the MathNet Teams and their Projects

1. Kent State University Team

The Team: PI: Karl W. Kosko, Co-PIs: Dr. Qiang Guan, Dr. Richard E. Ferdig

Project Title: Designing A Machine Learning Tool To Assess Children’s Fraction Arithmetic

Goal: This project aims to design and pilot a tool that allows teachers to take a picture and/or scan with their smartphone or tablet to receive an Machine Learning based report assessing the student’s response, procedure, and level of reasoning with fractions.

2. University of Florida Team

The Team: PI: Dr. Wanli Xing, Co-PIs: Dr. Anthony Botelho, Dr. Jinnie Shin

Project Title: Project ViTAMR: Vision Transformer-based Augmentation through Diagnostic Feedback to Support Mathematical Reasoning

Goal: Project ViTAMR /vīt-□-m□r/ aims to generate new insights and understanding on students’ math learning strategies with hand-worked responses (e.g. images and texts) for mathematical reasoning and further create a machine learning pipeline using multimodal and multi task deep learning models to provide automatic diagnostic feedback for students’ mathematical reasoning. Diagnostic feedback has been shown to be a valuable pedagogical strategy to invoke, assist, and train students’ mathematical reasoning.

3. Worcester Polytechnic Institute Team

The Team: PI: Dr. Neil Heffernan, Co-PIs: Sami Baral, Abhishek Santhanam, Dr. Li Cheng

Project Title: Leveraging Artificial Intelligence to Analyze Students’ Math Work Uploaded in a Digital Platform

Goal:

- 1) Release a set of images (hopefully 100,000) that have PII stripped from them (students’ faces and their names that they might have written on the piece of paper and inadvertently included in their uploaded image) and publish the first paper using this data to spur the field to "beat" Dr. Heffernan and team;
- 2) Developing autoscoring techniques to facilitate teachers in assessment of student work with images.

Learn more about the MathNet competition on the [E-TRIALS website](#).

About The ASSISTments Foundation

The ASSISTments Foundation is a 501(c)(3) non-profit organization established in 2019 with

generous funding from the Chan-Zuckerberg Initiative and Schmidt Futures, and sponsored by Worcester Polytechnic Institute (WPI). The organization is dedicated to scaling the reach and impact of ASSISTments in classrooms nationwide, driven by the belief that every student deserves the opportunity to be good at math. The ASSISTments Foundation works with WPI to conduct cutting edge research on the learning sciences. www.assistments.org

MathNet

About Doug Jaffe

Doug is a consultant and advisor to philanthropies and non-profits in the K-12 education sector. He was a Senior Fellow at the Bill & Melinda Gates Foundation and held leadership roles at the New York State Regents Research Fund and the New York City Department of Education where he led human capital, strategy, data and technology initiatives. Prior to that Doug held roles in management consulting and product development in the private sector. Doug earned his J.D. from Columbia Law School and is an alumnus of the Broad Residency in Urban Education.

About Laurence Holt

Laurence works with philanthropic organizations on innovations in K-12 education. Before that he was Chief Product Officer at Amplify where he oversaw the engineering, design and production of the company's curriculum and assessment solutions. Over ten million students use those products today. Prior to that, Laurence founded and ran a business and technology consulting firm in London and New York with clients including Apple Computer, the BBC, and Goldman Sachs. He wrote three award-winning how-to books on topics including recognizing constellations and analyzing stock charts. He lives in Paris, France with his spouse, an artist, and ten-year-old twins.

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