Integrating Artificial Intelligence with Smart Engineering and English Language Arts in Upper Elementary Education

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Project type: RETTL, ITEST

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Project Overview: We are developing a set of machine learning-powered components enabling elementary students to create interactive AI-enabled solutions to problems presented in fictional stories during transdisciplinary activities at the intersection of AI, engineering, and literacy.

> During our first year of development and pilot testing, we **constructed prototypes** and identified where we can **improve supports for student exploration** of Machine Learning concepts.

Lessons Learned & Insights Gained
- Students had fun and were successful in creating interactive devices through our trainable prototype which applied the nearest-neighbor algorithm.
- Some students had beliefs and expectations for sequential robot behaviors, which are not supported by our machine learning model.
- It is important to provide visualizations to help students make sense of data representations and algorithm states.

Equity
Two of our three pilot test sites were community summer programs where all students were Black, and nearly all were from low-income households. We are centering our design iterations on feedback from these students and codeveloping activities with teachers in these communities.

New Challenges & Next Steps
- We are currently exploring which data visualizations and representations are appropriate and helpful for supporting upper elementary students in making sense of machine learning concepts and behaviors.
- This year we are focusing on teacher input and integrating our prototype tools into literacy. Suitable tasks selection is critical for supporting student exploration of ML.