Introduction:

This project is funded by Schmidt Family Foundation and UF AI Catalyst award. The advancements in algorithms and computing infrastructure have pushed the limits of AI further. The open-source ethos in the AI research community has further expedited the progress of AI not only because of effective communications among researchers but also the ability to search for more robust solutions based on prior findings. The recent breakthrough of deep learning, particularly the transformer architecture, has continuously revolutionized AI. Freedom to use vectorization computation in transformer architecture suggests better computational efficiency and allows researchers to experiment with complex and gigantic models (e.g., 175 billion parameters for GPT-3, one of the most powerful transformer-based models for conversational AI). The transformer architecture suggests the possibility of using pre-trained deep learning models to democratize human intellect and computing power in the manner of cyberinfrastructure. Research has suggested that even models with limited training data can benefit from pretrained models (Lan et al., 2019). However, the existing cyberinfrastructure of transformers focuses on contexts such as business (e.g., Self-driving cars) and medicine (e.g., AlphaFold). Few researchers in education have provided such infrastructure for the learning engineering community. Therefore, this project aims to deliver cyberinfrastructure with deep learning to support learning engineering research and development. We plan to provide open-sourced and gigantic pre-trained deep learning models for natural language processing (NLP).

Research supported by the funding:

Yet Another Predictive Model? Fair Predictions of Students’ Learning Outcomes in an Online Math Learning Platform

Toward building a fair peer recommender to support help-seeking in online learning