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Development of a machine-learning-driven digital teaching assistant that utilises student engagement data to improve access to and success in K-12 STEM education

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ABSTRACT

Student engagement is a key predictor of academic achievement and is closely linked to career awareness, interest, and preparedness. Measuring student engagement during STEM learning is challenging for teachers, given the dynamic and ever-changing nature of these learning environments. Even when engagement data can be collected, leveraging this information to refine and personalise instruction requires significant experience and time. To address this, we are developing Scoutlier EngagEd, a digital teaching assistant that embeds in existing Learning Management Systems (LMS) to automatically and invisibly gather multidimensional data on student engagement and performance during STEM learning. These data are being leveraged to model student learning and generate insights that produce human-like, actionable recommendations through a Large Language Model (LLM) for teachers to improve STEM learning outcomes.

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Dr. Luk Hendrik. Luk is a Co-Founder and COO at Aecern. Prior to Aecern, he was a Strategy Consultant at Deloitte Consulting and a Director at Sana MIT, where he worked with Dr. Leo Celi to build and research the

impact of capacity-building technology and digital education programs in healthcare, with an emphasis on reaching underserved communities. He also served as the Head of R&D for JASON Learning, a STEM Learning non-profit that reaches 5 million students in the US, as well as Director of Corporate Strategy at NWEA, an assessment organization that services over 15 million students.

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