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SP - (16026) - THE ARTIFICIAL SCIENTIST: EXPLORING POTENTIALS OF MACHINE LEARNING FOR SCIENTIFIC INQUIRY

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Short Abstract
Machine Learning (ML) methods have been shown to be capable of discovering scientific concepts from given experimental data. Findings as these show that computer-based methods can increasingly supplement and substitute phases of the scientific inquiry process. Consequently, science educators need to recognize these novel capabilities of computer-based methods. The goal for this study is to demonstrate (with an example) in what ways ML methods can be used in the scientific inquiry process. We will show that a comparably simple neural network can predict a physical system's behavior and form interpretable representations of the experimental observations. ML methods can thus supplement and substitute phases of the scientific inquiry process. Furthermore, the learning process of ML methods about physical systems can cast new insights on human physics learning as well.