

Abstract Submitted
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**Development of a Data Science-Based Mechanics Curriculum
Utilizing Custom-Designed Object Tracker Software¹** BRIANNA RAPP,
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With the explosive growth of data in our society, STEM educators are looking for ways to integrate computational skills into their courses to prepare students with the tools they need to be successful in their future careers. We are designing a physical science-informed data science curriculum that will allow students to develop computational and data handling skills as they learn physics concepts. The primary tool that has been developed to assist in this task is called the Object Tracker. It's a versatile Java Script program, built on the p5.js library, to automatically extract positional data from videos. The Object Tracker is useful as a laboratory tool for analyzing motion. It can calculate the X and Y position, change in position, velocity and time, velocity, acceleration, and time every frame in the video. For videos with a high frame rate, in which changes between the frames are more gradual, the Object Tracker provides the user the ability to smooth out any of the data it would calculate. Students can extract the data and use spreadsheet tools to catch, manipulate, and analyze their data set. A series of six modules is in development to allow students to build upon their conceptual gains of physics concepts while preparing them with analytic and computational skills.

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