SIMIODE Spring 2024 Webinars

Title: Using WikiModel to Rapidly Create, Simulate, Fit and Share Mathematical Models

Slides

Video

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Abstract: WikiModel (https://www.wikimodel.com) was created to enable teachers, students, scientists, and engineers to create custom mathematical models consisting of any number of closed form closed form and/or Ordinary Differential Equations (ODEs) with no programming. The cloud-based application requires no installation and is run via a web-browser to facilitate rapid implementation. Equations are typed in as they appear in a textbook. ODEs are automatically integrated via Runge-Kutta methods. Once created, these models can be simulated with parameters whose values are user defined or fit to experimental data whereby optimal parameters are identified.

The software implements non-linear or linear least squares methods as required. Desired state variables and datasets are selected from a drop down to be output in one or more plots. Once created, models and datasets can be shared to the public, a defined group of users, or remain private. The library of public models already contains pre-existing model examples in various scientific disciplines. WikiModel was built to rapidly simulate, and fit models in academia or industry. It is a tool that will hopefully motivate students and scientists to explore and benefit from the value mathematical models bring in solving real world problems without being bogged down in their implementation.

You may also view slides and watch a presentation, “WikiModel—A Web-based Software Application that Enables Teachers, Students, Scientists and Engineers to Simulate, Fit, and Share Mathematical Models ,” by the presenter at SIMIODE EXPO 2024 conference at https://qubeshub.org/community/groups/simiode/expo/2024 .