# LiveGraph

## a tool for data visualisation, analysis and logging in complex systems simulations

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Simulation is an essential tool in complex systems research. And the hardest, most time-consuming part of simulation development is the user interface, especially monitoring tools and visual display.

Several visualisation frameworks are available, however, they usually require extensive data preparation from the model developer and trade off powerful functions for a complex, slow-to-use user interface. Such frameworks are targeted at post-simulation data analysis.

Our LiveGraph framework for exploratory data analysis combines several features that are (at least in combination) missing in other products:

- A plotter that automatically updates graphs of simulation outputs in real-time.
- A concise and simple point-and-click interface that allows users to quickly select and compare data series even in simulations outputting over 1000 series simultaneously.
- Transformation of data series for visual comparison, or application of feature detection by the virtue of a single click.
- The framework is Java-based and can be run on any computer system. However, it is easily integrated with simulations written in any programming language.
- LiveGraph reads files in a simple CSV-style format. For simulations written in Java it provides an API that handles data logging.

These features make the LiveGraph system particularly useful while exploring the parameter space of a simulation model. LiveGraph is a generic tool that allows researchers to direct their effort to actual models, not visualisation.

The demonstration shows how LiveGraph was used with two very different complex systems simulation models.

For more information please visit http://www.live-graph.org.