Frequently Asked Questions

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1. CESE users

1.1. What is CESE?

CESE is a simulation package for electrophysiology. It allows you to use models of electrical activity of excitable cells — for example, myocytes or neurons. Currently, only single cell models are supported.

CESE allows you to perform simulations, control model parameters, create and execute clamping commands, and perform simple data analysis using the same, intuitive interface.

1.2. What CESE is not?

CESE is not the data analysis software. The set of analysis features is kept intentionally small. It is anticipated that after simulations and, perhaps, simple analysis, data will be exported to 3-d party software for further processing. CESE supports export to ASCII, Axon Clampfit, and NetCDF data formats.

Currently, CESE does not emulate single channel behavior. It is planned for future versions, but for now CESE is suitable for the whole cell current simulations only.

1.3. What are the system requirements for CESE?

CESE requires JDK/JRE version 1.5 (5.0) or above to be installed.

This application is written in pure Java and was tested under Windows, Linux, Solaris, MacOS X, and AIX. All required 3-d party libraries are included in the distribution.

1.4. Is CESE open-source?

CESE is linked to the data visualization library (`com.simulogic.dataview`) that is being distributed under the terms of GNU-GPL2. Hence, the rest of CESE is also GPL-compatible. Certain 3-d party libraries may hold different license. Refer to the specific documentation for details.

Contact us (support@simulogic.com) if you need to dual-license CESE for commercial purposes.

1.5. What type of simulations can be performed with CESE?

CESE can perform simulations using single cell models (containing both Hodgkin-Huxley (HH) and Markovian current formulations). The typical usage is simulation of action potentials and individual ionic currents. You can visualize model variables, and control them using clamp commands.

1.6. I think I found a bug / I need a new feature...

Visit our SourceForge page to file a bug report or to request a feature.

2. CESE developers

2.1. What tools do I need to create new models with CESE?

CESE is a Java program. You can use your favorite set of Java development tools to program for CESE. CESE has been built against J2SDK 1.5.0. You can build CESE or models using the included Ant build scripts. Refer to the description of the CESE build system.

2.2. How much work is involved in the new model creation?

Thanks to the object-oriented design of CESE, you can create new models by modifying/extending the existing ones. Make sure to check the source code of the models provided with CESE distribution and read the model creation howto.

If you want to create a new model completely from scratch, extend the `com.javable.cese. templates.AbstractAPModel` class.

> Note: Advanced Simucore models, and custom-developed models are available. Visit Simulogic Inc. for more information.

2.3. Are there any limitations in the model API?

Currently, the main limitation of the model API is its inability to support more than one Markovian current formulation in the given model. Therefore, you can use a "mix" of HH model with one current coded as Markovian.

> This limitation is resolved in the advanced Simucore models. Visit Simulogic Inc. for more information.

2.4. Does CESE supports models in CellML/SBML format?

The preliminary support for transformation of CellML (http://www.cellml.org) models to CESE format is available. Limited set of CellML 1.0 features is supported, refer to the CellML and CESE document for status and usage information.

The SBML format support will be added when a significant number of electrophysiological models is ported to it.

Additional CellML support is commercially available. Visit Simulogic Inc. for more information.

2.5. How can I contribute to CESE?

CESE is hosted at SourceForge. We provide full access to the CESE source code via CVS repository. The easiest way to help us develop CESE is to obtain a SourceForge account and mail support@simulogic.com. You will be added to the project as a developer and given CVS write privileges.

If you have developed a new model or extended the existing one and don't want to go through the SourceForge registration, follow the model submission guidelines.

3. Documentation

3.1. Where do I get more information about CESE?

CESE contains context help in the JavaHelp format. Press F1 in the main CESE window.

3.2. How can I help write documentation?

This project uses Apache Forrest to generate documentation from XML. Please download a copy of Forrest, which can be used to validate, develop and render a project site.