



Adrian Quintana

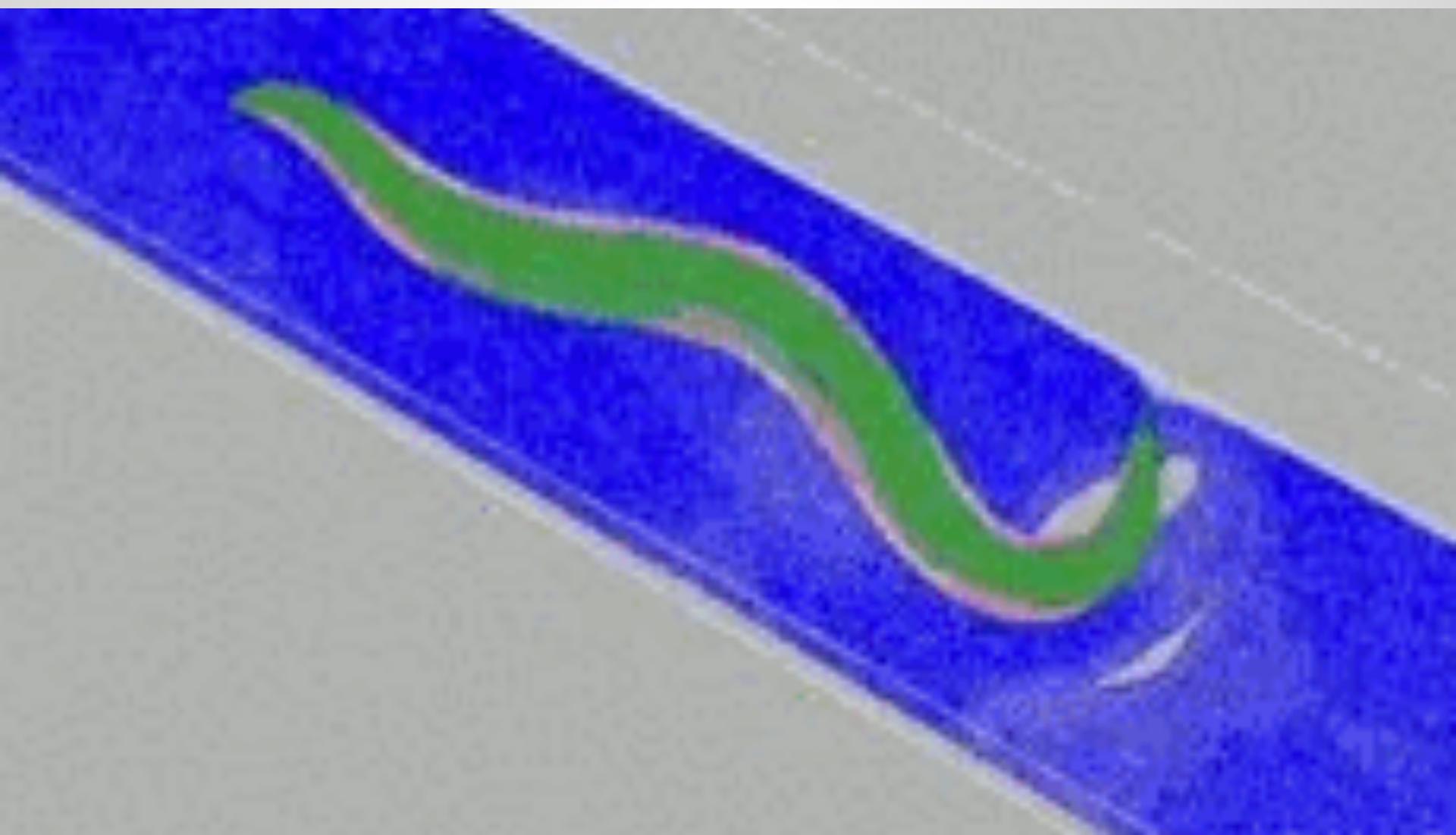
Open Collaboration in Computational Neuroscience - OCNS 2015

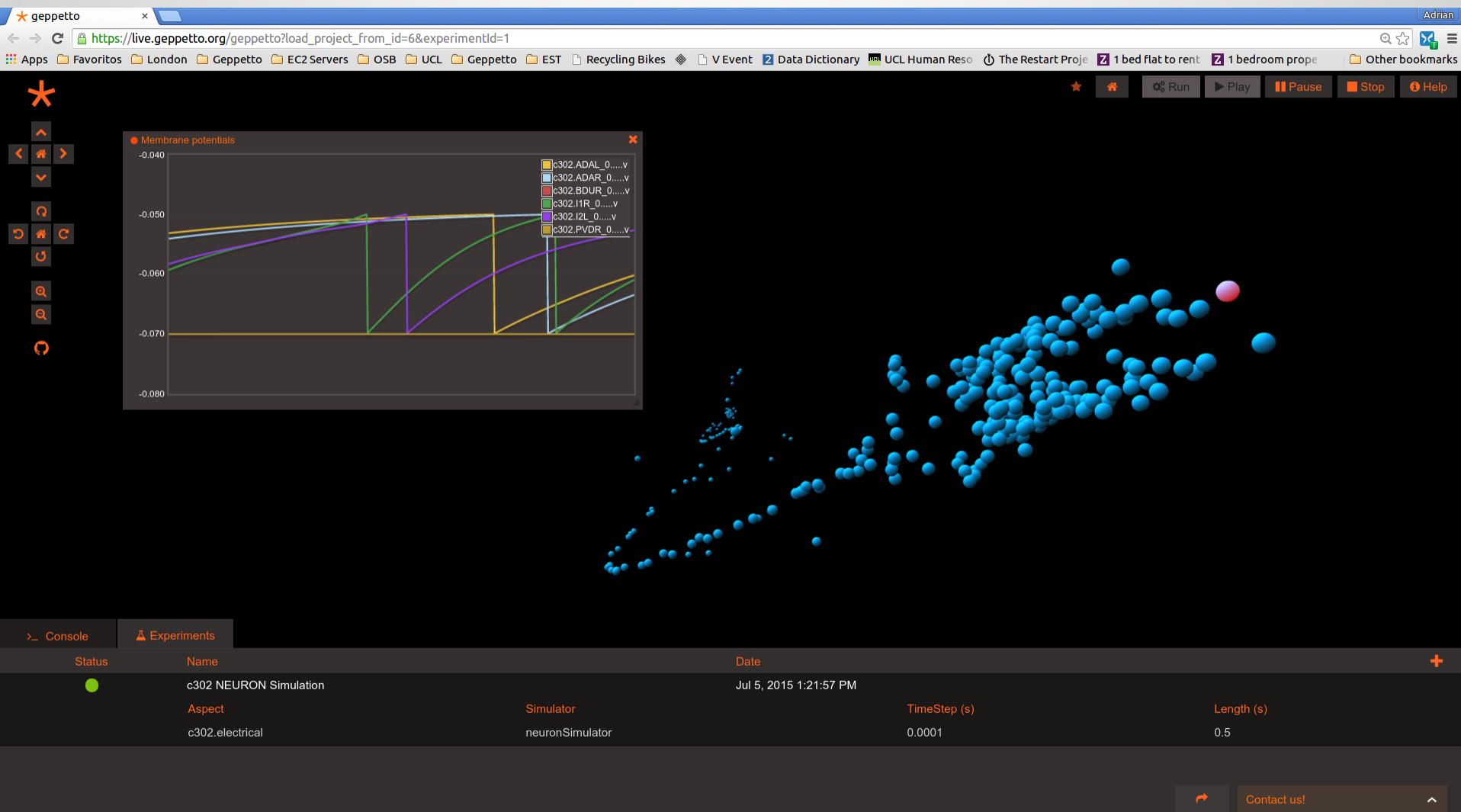
University College London

**Geppetto is an open-source platform
aimed at multi-algorithm and multi-
scale visualization, exploration and
simulation of biological systems and
their environment**

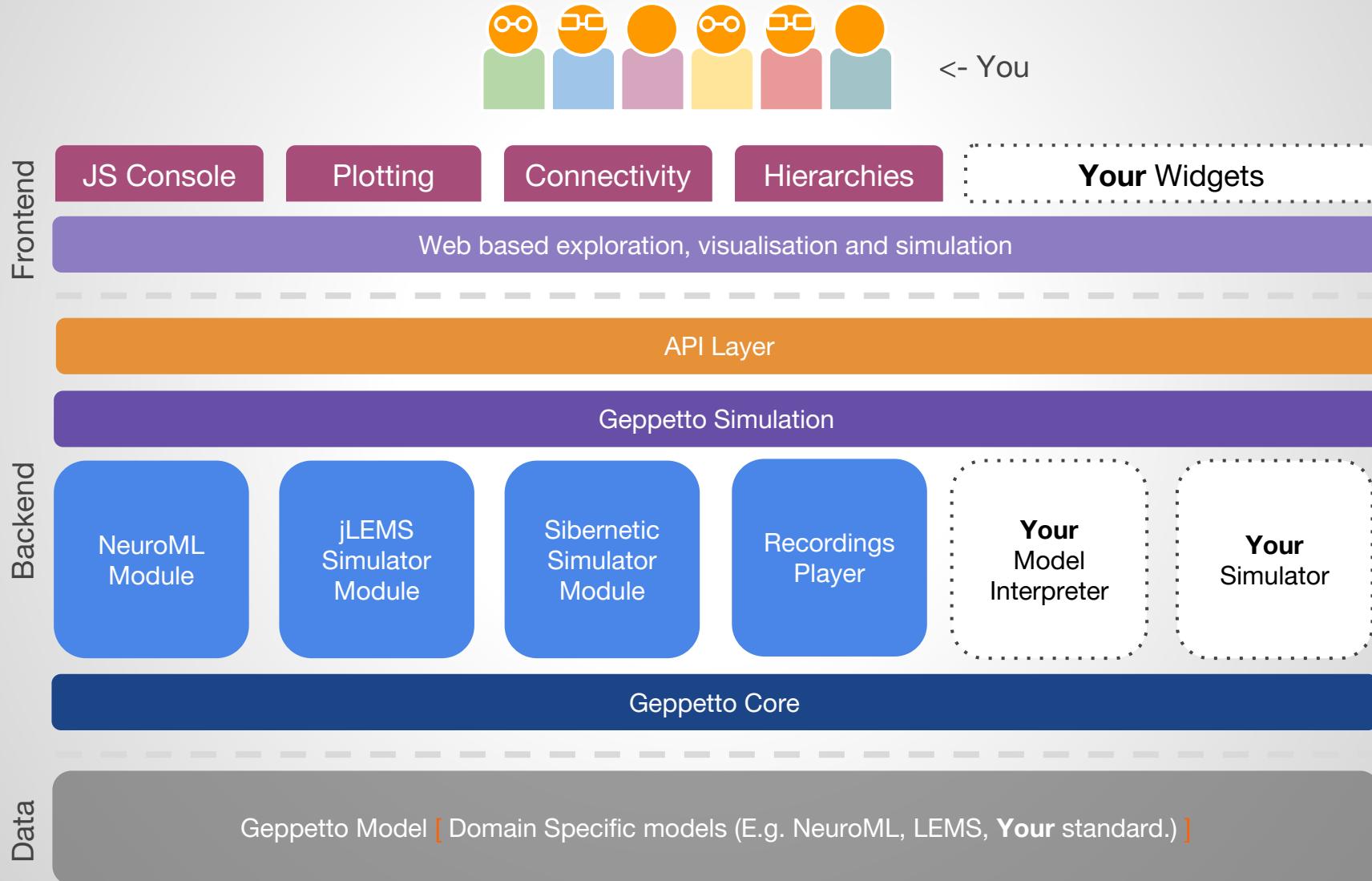


Where does it come from?





Gepetto Architecture



Technology stack



Java™



maven



Open Source Development

How is it being developed?

Open Source, **MIT** License

3+ years of development

11 backend modules, 8 Widgets

50,000+ lines of code

Growing community (15+ contributors)

Bi-weekly Google Hangout open meetings

Open process

Regular Monthly Releases

(latest 0.2.4 alpha)

openworm/org.gepetto x MetaCell

<https://waffle.io/openworm/org.gepetto>

Add Issue Filter Board

Ideas 39 58 Backlog 84 145 To do 16 57 In Progress 11 156 Needs review 15 58 Done 7 33

390 Main Eclipse plugin for installing and configuring gepetto

91 Skeleton extraction Making skeleton extraction very fast - maybe almost in real-time enhancement

366 Main Add attribute to Gepetto to optionally specify what to load

365 Main Add individual methods for known widgets enhancement

364 Main Add console option to change background colour from black in main 3D view enhancement

241 Frontend Drawing synaptic connections

309 Main Integrate NSDF format for neuroscience recordings

273 Frontend Tree visualizer right click menu for cell in network

65 Model-NeuroML Extra cell in ModelTree

42 WormSim The user must be logged in into wormsim to open wormsim custom gepetto instance bug wormsim

48 WormSim Review WormSim bug wormsim

378 Main Define API for time series/VariableNode design

259 Frontend VisualReferences in Connection Lines

263 Main Update how 3D objects are referenced enhancement

294 Main Centralize list of model formats in

391 Main Review Variable Watch changes Sprint 49

9 Main Compression of data transfer between server and client Sprint 49 enhancement

387 Main Release 0.2.3 Sprint 49

41 WormSim Implement logic from "submit" button on landing page Sprint 49 wormsim

46 WormSim Map model entity names to recording entity names wormsim

58 Core Update Javascript API to allow for calling conversion services

313 Main Design Export feature for a ModellInterpreter design

367 Main Centralize list of model formats in

388 Main Error in display of cell positions Sprint 49 bug

331 Main Add display of time global variable & scale bar on x axis of plots Sprint 48 bug

5 External simulator Finalise variable watch for external simulator Sprint 49

47 WormSim Style WormSim wormsim

379 Main Refactor simulation backend to add support for visual transformations in recordings Sprint 49 wormsim

376 Main Refactor run simulation workflows Sprint 48

248 Frontend Network activity widget design Sprint 49

380 Main Error Code: INITIALIZATION

66 Model-NeuroML Domain info

272 Frontend List watchable variables

68 Core List watchable variables

87 Simulation List watchable variables

67 Model-NeuroML List watchable variables

44 Simulator-jLEMS List watchable variables

36 Test backend List watchable variables

29 Samples List watchable variables

53 Solver-SPH Error in connectivity widget for ACNet Sprint 48 bug

386 Main SetParameters frontend implementation Sprint 49

385 Main SetParameters backend implementation Sprint 49

1 Recording Add support for matrices

269 Frontend Extend widget API

389 Main Latest development version failing: org.gepetto.core.features.IFeature not found Sprint 49 bug

382 Main Review Sprint 48 Sprint 48

384 Main Error in connectivity widget for ACNet Sprint 48 bug

<http://board.gepetto.org>

openworm/org.gepetto GitHub, Inc. [US] https://github.com/openworm/org.gepetto MetaCell

Gepetto

GITTER JOIN CHAT →

[Website](#) | [Documentation](#) | [Install Instructions](#) | [Releases](#)

[Contribution guidelines](#) | [Development progress](#)

Gepetto is a web-based multi-algorithm, multi-scale simulation platform engineered to support the simulation of complex biological systems and their surrounding environment.

Although Gepetto was designed with systems biology in mind, thanks to its generic architecture Gepetto can be used anywhere there is need to rely on a backend to perform any kind of simulation which then needs to be streamed to a web client, allowing the user to interact with the simulation remotely and through an API (accessible from an embedded Javascript console) and a set of customisable widget which allows visualising data in different ways.

Gepetto is a modular platform based on Java, OSGi and Spring and different modules (also named bundles) provide different functionalities.

This is the umbrella project that keeps together all the different modules currently available:

- Essential
 - [org.gepetto.core](#) build passing
 - [org.gepetto.simulation](#) build passing
 - [org.gepetto.frontend](#) build passing
- Domain Specific
 - Neuronal simulation
 - [org.gepetto.model.neuroml](#) build passing
 - [org.gepetto.simulator.jlems](#) build passing
 - Fluid mechanics simulation
 - [org.gepetto.model.sph](#) build passing
 - [org.gepetto.solver.sph](#) build passing
 - [org.gepetto.simulator.sph](#) build passing

Gepetto is an open-source project with a growing community, if you want to contribute (with either new simulators support, visualisation widgets or backend magic) please do get in touch at info@gepetto.org or fork any of the bundles and do what you please.

[Website](#) | [Documentation](#) | [Install Instructions](#) | [Releases](#)

[Contribution guidelines](#) | [Development progress](#)

<http://git.gepetto.org>

Who is using Gepetto?

Geppetto

live.geppetto.org

Login

OpenWorm

WormSim

your@email.com

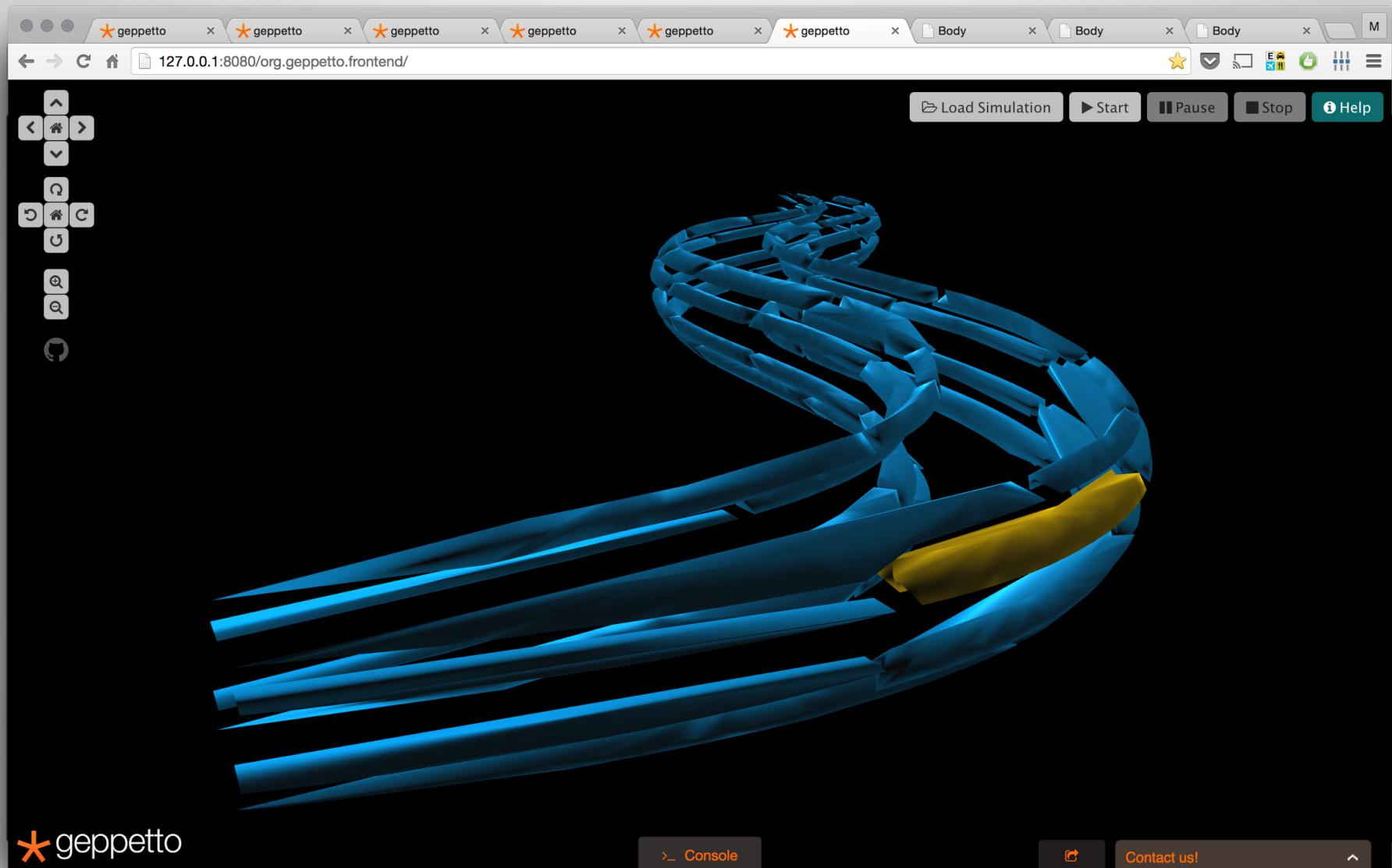
Request

Don't have a login? Request an invitation to have your own WormSim subscription.

Learn the biology of the C. elegans with your own WormSim

Learn the biology of the C. elegans with your own WormSim

Learn the biology of the C. elegans with your own WormSim



3D Olfactory Bulb Migliore et al. 2014

OSB endorsed project 

Curation against published models: Low ★

Vertebrate / Mammalian / Rodent / Olfactory bulb / Network model / 3D Olfactory Bulb - Migliore et al. 2014

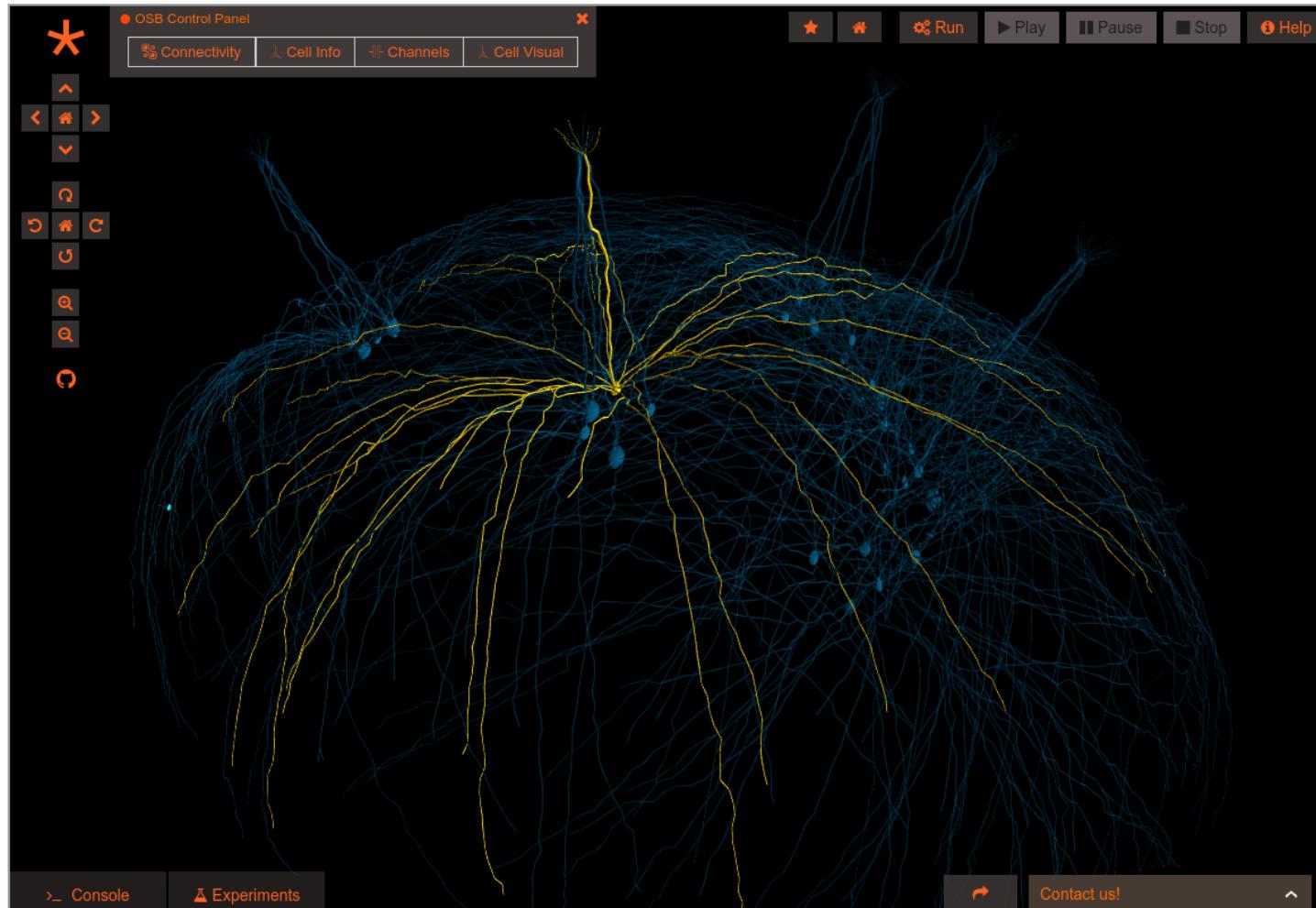
Overview

OSB 3D Explorer

Wiki

Other tools

Full Screen



Demo

ppetto1.mp4?dl=0

- <https://www.dropbox.com/s/flbgaaffvm7povr/Geppetto2.mp4?dl=0>

The Future

Collaborative modelling

Tutorial

More standard
formats support,
more simulators.

Data
analysis

Multiple aspects
integration

Parameters
space sweep

How do I use it?

Platform Showcase

<https://live.gepetto.org>

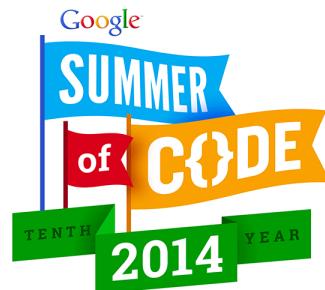
<http://www.gepetto.org>

<http://docs.gepetto.org>

<http://board.gepetto.org>

<http://git.gepetto.org>

Groups contributing to Geppetto





Geppetto
is a collaborative effort.

Help us build it,
improve it and
fund it.

Thanks for the attention!

