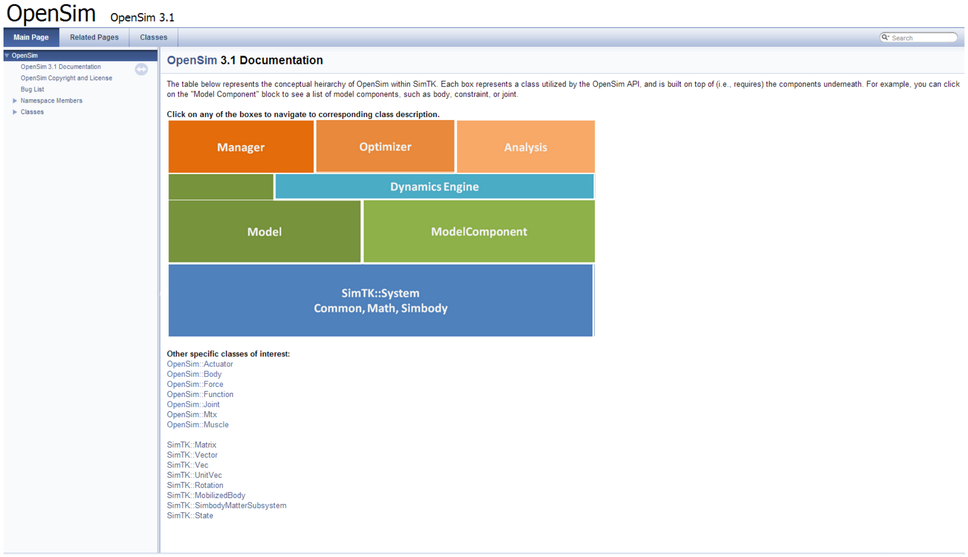
Guide to Using Doxygen

Doxygen is an automated documentation system for available Classes and methods. This page will introduce you to navigating the online Doxygen pages and orientate you to the structure and language used.

Doxygen Navigation



OpenSim 3.1 Documentation

The table below represents the conceptual heirarchy of OpenSim within SimTK. Each box represents a class utilized by the OpenSim API, and is built on top of (i.e., requires) the components underneath. For example, you can click on the "Model Component" block to see a list of model components, such as body, constraint, or joint.

Click on any of the boxes to navigate to corresponding class description.

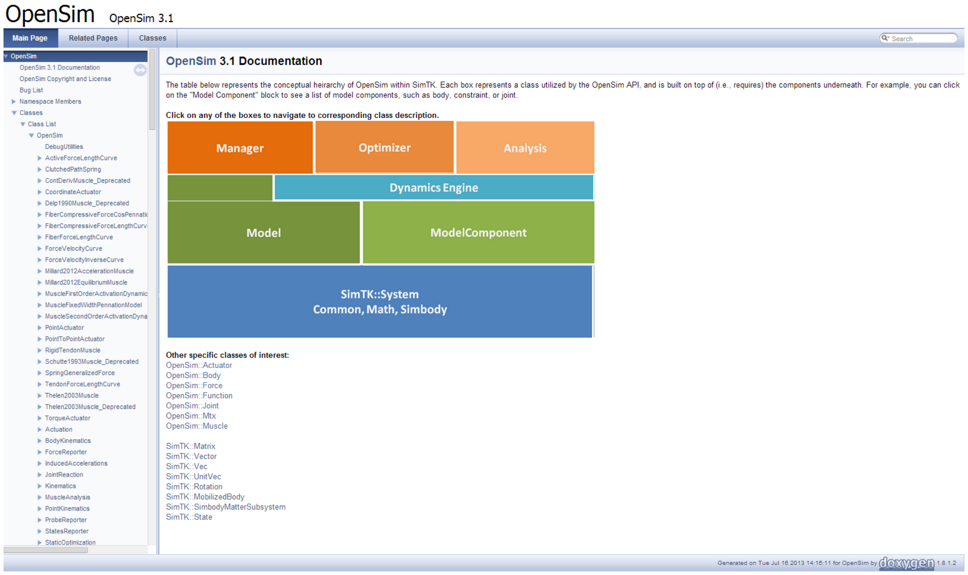
Other specific classes of interest:
OpenSim::Actuator
OpenSim::Body
OpenSim::Force
OpenSim::Function
OpenSim::Joint
OpenSim::Mtx
OpenSim::Muscle

SimTK::Matrix
SimTK::Vector
SimTK::Vec
SimTK::UnitVec
SimTK::Rotation
SimTK::MobilizedBody
SimTK::SimbodyMatterSubsystem
SimTK::State

Doxygen Hompage

The doxygen homepage gives a top level view of the class groupings and the most popular OpenSim and SimTK classes. From the homepage you can navigate down the Class hierarchy by clicking on blocks that correspond to the Classes that interest you.

The search box, located in the top right hand corner, searches through the matching Class names. This is useful if you know the class name but can be limiting if you are trying to discover Classes or methods. If you are trying to discover a method to use we suggest using the OpenSim omnisearch box, which searches through all the OpenSim confluence, forum and doxygen content.



OpenSim OpenSim 3.1

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        - CoordinateActuator
        - Delp1990Muscle_Deprecated
        - FiberCompressiveForceCosPennatic
        - FiberCompressiveForceLengthCurv
        - FiberForceLengthCurve
        - ForceVelocityCurve
        - ForceVelocityInverseCurve
        - Millard2012AccelerationMuscle
        - Millard2012EquilibriumMuscle
        - MuscleFirstOrderActivationDynamic
        - MuscleFixedWidthPennationModel
        - MuscleSecondOrderActivationDyna
        - PointActuator
        - PointToPointActuator
        - RigidTendonMuscle
        - Schutte1993Muscle_Deprecated
        - SpringGeneralizedForce
        - TendonForceLengthCurve
        - Thelen2003Muscle
        - Thelen2003Muscle_Deprecated
        - TorqueActuator
        - Actuation
        - BodyKinematics
        - ForceReporter
        - InducedAccelerations
        - JointReaction
        - Kinematics
        - MuscleAnalysis
        - PointKinematics
        - ProbeReporter
        - StatesReporter
        - StaticOptimization

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Click on any of the boxes to navigate to corresponding class description.

Manager | Optimizer | Analysis

Dynamics Engine

Model | ModelComponent

SimTK::System
Common, Math, Simbody

Other specific classes of interest:

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OpenSim::Function
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SimTK::SimbodyMatterSubsystem
SimTK::State

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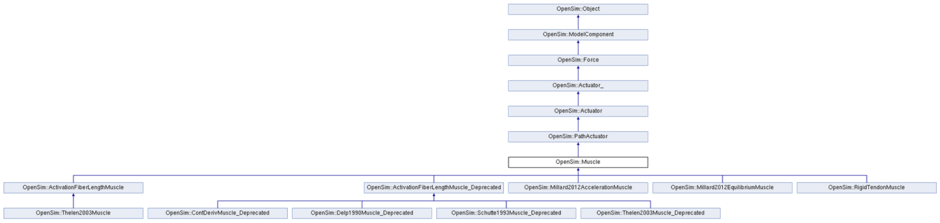
Class Lists

The left hand navigation panel is used move through Class lists, Class Hierachy and Class Members. The flat and hierarchical Class lists show all of the API classes and give you the opportunity to discover new Classes.

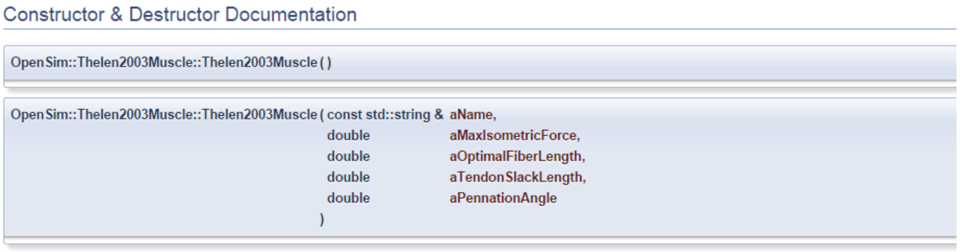
Parts of the Doxygen Page

Once you navigate to a Class of interest, you will find several sections.


OpenSim::Object
OpenSim::ModelComponent
OpenSim::Force
OpenSim::Actuator_
OpenSim::Actuator
OpenSim::PathActuator
OpenSim::Muscle
OpenSim::ActivationFiberLengthMuscle
OpenSim::ActivationFiberLengthMuscle_Deprecated
OpenSim::Millard2012AccelerationMuscle
OpenSim::Millard2012EquilibriumMuscle
OpenSim::RigidTendonMuscle
OpenSim::Thelen2003Muscle
OpenSim::ContDerivMuscle_Deprecated
OpenSim::Delp1990Muscle_Deprecated
OpenSim::Schutte1993Muscle_Deprecated
OpenSim::Thelen2003Muscle_Deprecated

Class Hierarchy

Class Hierarchy diagrams display the inheritance of methods from abstract to concrete Classes. For example, a Muscle() is a PathActuator() and inherits all the functionality of a PathActuator() while the Thelen2003Muscle() is a Muscle() and inherits all the functionality of the Muscle() Class.



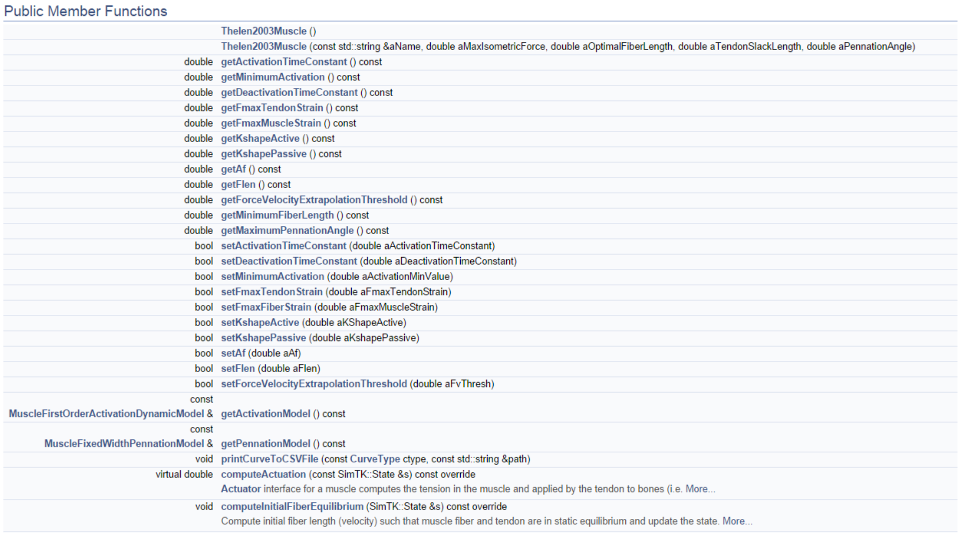
Constructor & Destructor Documentation

```
OpenSim::Thelen2003Muscle::Thelen2003Muscle ( )

OpenSim::Thelen2003Muscle::Thelen2003Muscle ( const std::string &  aName,
                                              double               aMaxIsometricForce,
                                              double               aOptimalFiberLength,
                                              double               aTendonSlackLength,
                                              double               aPennationAngle
                                            )
```

Constructor Method

Methods and inputs to build an instance of a class. When given no inputs, indicated by empty brackets, a default instance of the class is created.



Public Member Functions

	Thelen2003Muscle ()
	Thelen2003Muscle (const std::string &aName, double aMaxIsometricForce, double aOptimalFiberLength, double aTendonSlackLength, double aPennationAngle)
double	getActivationTimeConstant () const
double	getMinimumActivation () const
double	getDeactivationTimeConstant () const
double	getFmaxTendonStrain () const
double	getFmaxMuscleStrain () const
double	getKshapeActive () const
double	getKshapePassive () const
double	getAf () const
double	getFlen () const
double	getForceVelocityExtrapolationThreshold () const
double	getMinimumFiberLength () const
double	getMaximumPennationAngle () const
bool	setActivationTimeConstant (double aActivationTimeConstant)
bool	setDeactivationTimeConstant (double aDeactivationTimeConstant)
bool	setMinimumActivation (double aActivationMinValue)
bool	setFmaxTendonStrain (double aFmaxTendonStrain)
bool	setFmaxFiberStrain (double aFmaxMuscleStrain)
bool	setKshapeActive (double aKShapeActive)
bool	setKshapePassive (double aKshapePassive)
bool	setAf (double aAf)
bool	setFlen (double aFlen)
bool	setForceVelocityExtrapolationThreshold (double aFvThresh)
const MuscleFirstOrderActivationDynamicModel &	getActivationModel () const
const MuscleFixedWidthPennationModel &	getPennationModel () const
void	printCurveToCSVFile (const CurveType ctype, const std::string &path)
virtual double	computeActuation (const SimTK::State &s) const override Actuator interface for a muscle computes the tension in the muscle and applied by the tendon to bones (i.e. More...
void	computeInitialFiberEquilibrium (SimTK::State &s) const override Compute initial fiber length (velocity) such that muscle fiber and tendon are in static equilibrium and update the state. More...

Member Functions

Public member functions list all the available methods. Public member functions are easily accessible, especially in Matlab and python. Protected member functions are generally not accessible by users and are rather used in development of new classes

Next: Scripting

Previous:The OpenSim API

Home: Scripting and Development