

PuppetMaster Release Notes

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Version 1.4

Upgrade Guide

1. **MAKE A BACKUP!** Open a new scene, delete “Plugins/RootMotion” and reimport. Also reimport Final IK if you had that in your project.
2. If you were using any of the integration packages, re-import them from “Plugins/RootMotion/PuppetMaster/_Integration”.

Fixes

1. Fixed adding velocity to kinematic Rigidbody warnings.
2. Fixed onLoseBalanceFromPuppet and onLoseBalanceFromGetUp events not getting called when onLoseBalance was set to switch behaviours.
3. Fixed issues with scaling muscles in Unity6.

Version 1.3

Upgrade Guide

3. **MAKE A BACKUP!** Open a new scene, delete “Plugins/RootMotion” and reimport. Also reimport Final IK if you had that in your project.
4. If you were using any of the integration packages, re-import them from “Plugins/RootMotion/PuppetMaster/_Integration”.

Improvements

1. Added a way to setup PuppetMaster at runtime with behaviour prefabs.

Fixes

4. Fixed “‘Physics.autoSimulation’ is obsolete” error in Unity 2022.2 and later versions.

Version 1.2

Upgrade Guide

5. **MAKE A BACKUP!** Open a new scene, delete “Plugins/RootMotion” and reimport. Also reimport Final IK if you had that in your project.
6. If you were using any of the integration packages, re-import them from “Plugins/RootMotion/PuppetMaster/_Integration”.

Improvements

2. Updated KinematicCharacterController integration to their version 3.4.1.
3. Added SetHasCollided(bool) to BehaviourPuppet. Puppets don’t get unpinned unless they have collided with anything on the “Collision Layers” since the last time they got up so this can be used to override that.
4. Added BehaviourPuppet.platformVelocity, to be set for puppets that are on moving platforms to make getting up work properly for them.
5. Added the “Puppet On Moving Platform” demo.
6. Added integration package for Starter Assets - Third Person Controller.

Fixes

5. BehaviourPuppet.hasCollidedSinceGetUp defaults to false after 3 seconds after collision.
6. Fixed BehaviourPuppet using Collision.gameObject.layer instead of Collision.collider.gameObject.layer layer in some cases.
7. Fixed newly created puppets having their joint connectedAnchors reset to zero in Start.
8. Fixed ConfigurableJoints not showing Connected Body field in Unity 2022.

Version 1.1

Upgrade Guide

7. **MAKE A BACKUP!** Open a new scene, delete “Plugins/RootMotion” and reimport. Also reimport Final IK if you had that in your project.
8. If you were using any of the integration packages, re-import them from “Plugins/RootMotion/PuppetMaster/_Integration”.

Improvements

7. Added “Clip Settings” to Baker, allowing you to define AnimationClipSettings to the baked animation clips.
8. BehaviourBipedStagger can now re-balance the puppet. Enable “Can Regain Balance” and set “On Regain Balance” event’s “Switch To Behaviour” to “BehaviourPuppet”.
9. You can now right-click on PuppetMaster’s header and do “Save Settings as Humanoid Config” from the context menu to create a new PuppetMasterHumanoidConfig with the current settings.
10. Added Mirror networking integration demo.
11. Improved PUN2 integration demo.
12. Added Actuator.cs. Actuator is a component that drives ConfigurableJoint targetRotation and slerpDrive to make it match the localRotation of a target Transform, allowing you to turn every joint into an actuated muscle.
13. Updated UMA2 integration to v2.12.
14. Added ParticleCollisionHandler.cs and “Puppet Particle Collision” demo about how to use particle collisions with BehaviourPuppet.
15. Removed the requirement of puppets not sharing the same root Transform.

Fixes

9. Fixed PuppetMaster failing to initiate if NavMeshAgent on the character snaps it to the nav mesh.
10. Kinematic-Kinematic contact pairs activate the puppet now when BehaviourPuppet’s Normal Mode is set to Kinematic and “Contact Pairs Mode” set to at least “Enable Kinematic Kinematic Pairs” in the Physics Settings.
11. Fixed BehaviourPuppet/Fall snapping to the ground when ragdolling in Unmapped or Kinematic mode.
12. Fixed prop inertia tensor increasing with every pick-up.

13. Fixed "Fix Muscle Positions" and "Fix Muscle Positions and Rotations" not marking the scene dirty and not being saved.
14. Fixed mapping fail when Muscles and their targets have different scales.
15. BehaviourPuppet will log an error if it finds muscle groups not properly assigned.
16. Rewrote Mirror networking integration package for much improved smoothness, bandwidth and stability.
17. Fixed feet dangling when foot colliders disabled by BehaviourPuppet.
18. Fixed BehaviourBipedStagger not respecting dead muscle weight.
19. Updated Invector integration package to v2.5.7.

Version 1.0

Upgrade Guide

9. **MAKE A BACKUP!** Open a new scene, delete “Plugins/RootMotion” and reimport. Also reimport Final IK if you had that in your project.
10. If you were using any of the integration packages, reimport them from “Plugins/RootMotion/PuppetMaster/_Integration”.
11. Muscle.props.mapPosition was deprecated (forced to enabled now).

Improvements

16. Added RayCapsuleIntersection() methods to PhysXTools for doing virtual raycasts without actual colliders.
17. Improved PuppetMaster velocity matching accuracy, will see much better accuracy especially on puppets that are connected to moving platforms like skateboards or vehicles.
18. Improved VRPuppet drag, uses muscle.targetVelocity instead of simple drag now.
19. Added Kinematic Character Controller (v 3.2.1) integration package (_Integration folder).
20. Added PUN integration package (_Integration folder).
21. Added PUN2 integration package (_Integration folder).
22. Added RigidbodyController.cs in case you ever need to make a single Rigidbody follow a target Transform by AddForce/Torque.
23. Added integration package for Opsive’s UCC v 2.2.3 (_Integration folder).

Fixes

20. Fixed Baker IK position/rotation baking for Animators that have parent gameobjects.
21. Fixed Baker not updating clip length when overwriting file.
22. Fixed PuppetMaster activating with empty PropMuscles active if ReconnectMuscleRecursive(0) called before activation.
23. Fixed character replacement tool not replacing PropMuscle.
24. Fixed some PuppetMaster editor tools not marking scene dirty after making changes to it.
25. Fixed Muscle.mappedAngularVelocity being calculated in degrees instead of radians as Rigidbody.angularVelocity.
26. Added gravity to Muscle pin force calculation for better accuracy.

27. Fixed BehaviourPuppet not working correctly with Physics.autoSimulate disabled.

Version 0.9

Upgrade Guide

12. **MAKE A BACKUP!** Open a new scene, delete “Plugins/RootMotion” and reimport. Also reimport Final IK if you had that in your project.
13. If you were using any of the integration packages, reimport them from “Plugins/RootMotion/PuppetMaster/_Integration”.
14. Dropped support for Unity 5.x (not supported by Asset Store anymore). Min supported Unity version now is 2017.4.28f LTS. If you need a Unity5.x compatible version, please contact developer.

Changes

24. Changed the old PropRoot and Prop setup to PropMuscle and PuppetMasterProp. Please see the “Prop” demo for how the props should be set up for the new system.

Improvements

25. Smoother and more optimized muscle weight blending when getting up.
26. Added pickedUpMaterial and droppedMaterial to Prop for enabling you to have different PhysicMaterials for props when they are picked up or dropped.
27. Added Internal Collision Ignores to muscle props to allow you to force certain muscles or muscle groups to always ignore collisions with each other regardless of PuppetMaster.internalCollisions value.
28. Added PuppetMaster.manualInternalCollisionControl and manualAngularLimitControl to disable PuppetMaster from handling internal collision/angular limit ignores if necessary. Useful if you preferred to have full manual control over them by calling PuppetMaster.SetInternalCollisionsManual() or SetAngularLimitsManual();
29. Added “Min Pin Weight” to BehaviourPuppet’s Muscle Group Properties. Muscle pin weight can’t be reduced beyond this value when damage occurs from collisions. Useful for reducing puppet floppiness.
30. Added PuppetMaster.DisconnectMuscleRecursive() and ReconnectMuscleRecursive(), which is a new very fast and non-GC-allocating way of handling body part removal and props without doing expensive changes to puppet hierarchy.

31. Added PropMuscle and PuppetMasterProp, that is a much more efficient replacement for the old PropRoot and Prop system, works on the Dis/ReconnectMuscleRecursive methods and has buttons and Scene View visualization for easier setup.
32. Added safety checks and forcing PuppetMaster bone positions and rotations to match with their targets in Editor to prevent PuppetMaster initiation fail if you had accidentally moved PuppetMaster away from it's target root.
33. Improved general ragdoll stability.
34. Disabled damage from the ground layers while in the getup state and also disabled damage from ground layers to the foot muscles.
35. Added "Angular Pinning" to PuppetMaster. If disabled, only world space AddForce will be used to pin the ragdoll to the animation while 'Pin Weight' > 0. If enabled, AddTorque will also be used for rotational pinning. Keep it disabled if you don't see any noticeable improvement from it to avoid wasting CPU resources.
36. Updated UMA integration package to v 2.8.1.
37. Added the Baker, a powerful new tool for baking PuppetMaster physics to Humanoid, Generic and Legacy animation clips.
38. Added "Death Baker" and "Death Baker Falling" demos for the Baker.

Fixes

28. Fixed a problem with muscle mapped angular velocity calculation that caused Unity 2018.3+ to spike out when ragdolls were activated.
29. Switching rigidbodies to Discrete collision detection mode when going to Kinematic mode.
30. Fixed a bug with PropRoot trying to access uninitiated Props.
31. Fixed a bug with Muscle.EnableColliders() not enabling the colliders if DisableColliders() called more than once.
32. Fixed a bug with BehaviourPuppet teleporting the character a bit when SetState(BehaviourPuppet.State.Unpinned) called in Kinematic mode.
33. Fixed teleporting while in Kinematic or Disabled mode.
34. Fixed respawning glitches in Unity 2018.3.
35. Fixed prefab handling in Unity 2018.3.
36. Removed all warnings generated by PuppetMaster scripts in Unity 2018.3.
37. Fixed a bug with BehaviourPuppet's "Max Rigidbody Velocity" not being accounted for if BehaviourFall used.
38. Fixed an inaccuracy with the pinning forces that created problems with Rigidbodies that had large center of mass offset.
39. Fixed flickering and twitches with activating puppets from Disabled mode.
40. Fixed OnRead delegate not being called on inactive puppets.

Version 0.81 - 15.01.2019

Improvements

- 39. Added support for having Physics.autoSimulation disabled and updating PuppetMaster together with Physics.Simulate().

Fixes

- 41. When BehaviourPuppet activates with PuppetMaster pin weight less than 1, will set to unpinned state.
- 42. Fixed puppets losing balance immediately on respawn.
- 43. Fixed prefab error with setting up puppets in Unity 2018.3.

Version 0.8 - 25.10.2018

Improvements

- 40. Demo character can double-jump now.
- 41. Added OnCollision delegate to BehaviourPuppet to enable you to get collision event calls from the muscles even if those collisions have not resulted in a loss of pinning for the puppet.
- 42. Added PuppetMaster.Rebuild() to patch up puppets that have any number of their muscles removed.
- 43. Support for adding muscles to puppets in Kinematic mode.
- 44. Updated Ootii's Third Person Motion Controller integration package to version 2.73.
- 45. Updated Invector's Third Person Controller integration package (Basic Locomotion FREE v1.0c).
- 46. Added Opsive's Third Person Controller v1.3.10 integration package.
- 47. Added the "NavMesh" demo about how Puppets can be used with Unity Navigation and a custom navigator.
- 48. Added the "NavMeshAgent" demo about how Puppets can be used with NavMeshAgents.
- 49. Added a VR Boxing demo scene for Oculus (find it under Plugins/RootMotion/PuppetMaster/_Integration).
- 50. Added Rigidbody flight prediction methods to PhysXTools.

Fixes

- 44. Props can be created by script in runtime now.
- 45. Fixed dropping props in Disabled mode.
- 46. AnimationBlocker will be removed from the target when detached muscles are reattached.
- 47. Fixed a bug that did not set joint x/y/zMotion to locked again when a detached muscle was reattached.
- 48. Sometimes Unity raycasting can out a NaN value for RaycastHit.point. Added protective measures to prevent BehaviourPuppet from moving the puppet to a NaN position when it gets up.
- 49. Fixed mapping problems when PuppetMaster's "Pin Weight" is less than 1 and BehaviourPuppet is in "Unmapped" mode.
- 50. Fixed the board flipping in X-Boarding demo in Unity versions 2017 and later.

Version 0.71

Fixes

- 51. Fixed a puppet velocity bug when switching to BehaviourFall.

Version 0.7

Upgrade Guide

1. **MAKE A BACKUP!** Open a new scene, delete “Plugins/RootMotion” and reimport. Also reimport Final-IK if you had that in your project.
2. If you were using any of the integration packages, reimport them from “Plugins/RootMotion/PuppetMaster/_Integration”.

Improvements

- 51. Reworked the puppet teleporting/resetting code, deprecated BehaviourPuppet.Reset, replaced it with PuppetMaster.Teleport(Vector3 position, Quaternion rotation, bool moveToTarget). That works with or without puppet behaviours and is much more reliable.
- 52. Added public static void AddFromToTorque(Rigidbody r, Quaternion toR, ForceMode forceMode) to PhysXTools.cs. Can be used to drive the rotation of a Rigidbody through AddTorque.
- 53. Improved BipedRagdollCreator invalid references handling.
- 54. Added an integration package for Invector’s Third Person Controller.
- 55. Added “Ragdoll Aiming” demo to the Final-IK integration package. Demonstrates how you can make a ragdoll keep aiming at a target.
- 56. Added the “X-Boarding” demo to help get started with all kinds of boarding games.
- 57. Added blocking functionality to CameraController.cs.
- 58. Updated the UNet integration package to be able to make the puppets collide with each other (move one of the puppets with WASD), also added the Fall behaviour to the puppets.

Fixes

- 52. Fixed errors when calling BehaviourPuppet.SetState(BehaviourPuppet.State.Unpinned) from a collision event callback.
- 53. Fixed a bug with removing muscles by joint break force/torque.

- 54. Fixed a `NullReferenceException` when teleporting networked puppets.
- 55. Fixed the demo character controller rotation bug in Unity 2017.2.
- 56. Fixed velocity inheritance on `BehaviourFall` activation.
- 57. Updated UMA integration to support version 2.6.2.

Version 0.6.1 - 11.04.2017

Upgrade Guide

3. **MAKE A BACKUP!** Open a new scene, delete “Plugins/RootMotion” and reimport. Also reimport Final-IK if you had that in your project.
4. If you were using any of the integration packages, reimport them from “Plugins/RootMotion/PuppetMaster/_Integration”.

Improvements

59. Significantly improved the accuracy at which puppets are able to follow the target animation, puppets will not fall behind as much if the character controller is moving fast.
60. Removed muscle.offset to improve performance and stability.
61. When Puppets are created, “Map Position” will be set true for all leg/foot muscles to improve mapping quality.
62. Animated momentum will be transferred to the rigidbodies when switching from Kinematic to Active mode. Will enable you to set state to Dead immediately from Kinematic mode and still preserve animated momentum.
63. Added “Collision Threshold” to the Collision Resistance Multipliers so you could override “Collision Threshold” for specific layers.
64. Added the “Scaling” demo scene and PuppetScaling.cs script.
65. Improved puppet behaviour activation. If all behaviours are enabled, will start with BehaviourPuppet. If not, will start with the enabled behaviour instead of forcing BehaviourPuppet. If all behaviours are disabled, will not force activation.
66. Added “Pin Weight Threshold” to BehaviourPuppet. If a muscle has drifted farther than ‘Knock Out Distance’, will only unpin the puppet if it’s pin weight is less than this value. Lowering this value will make puppets less likely to lose balance on minor collisions.
67. Added “Unpinned Muscle Knockout” to BehaviourPuppet. If false, will not unbalance the puppet by muscles that have their pin weight set to 0 in PuppetMaster muscle settings.

Fixes

58. Trigger colliders on muscles will not be added to PuppetMaster collider management.
59. Fixed a bug that killed the velocity of the puppet when set to Dead state when more than 1 FixedUpdate called per frame.
60. Fixed a bug with BehaviourPuppet’s “Collision Threshold” not working with collision resistance multipliers.
61. OnCollisionImpulse is also called for collisions with impulse below “Collision Threshold”.
62. Fixed editor script obsolete API warnings in Unity 5.6.

Version 0.6 - 07.03.2016

Upgrade Guide

5. **MAKE A BACKUP!** Open a new scene, delete the previous version and reimport
6. Collision Resistance value may have to be tweaked, especially when you have puppets of various mass (see Fix no 2).

Improvements

68. Improved the performance and reliability of blending from ragdoll to getting up.
69. Added "Force Layers" toggle to Props. Disabling will make PM not force the prop's layers to match the puppet's when it is picked up.
70. Added BehaviourBipedStagger and "Stagger" demo to the Final-IK integration package.
71. Added PhysXTools.cs, a helper for calculating forces, torques, inertia tensors and such.
72. Added PressureSensor.cs, can be used for detecting if a Rigidbody is in contact with anything and determining that collision's center of pressure.
73. BehaviourPuppet will not force muscle.state.immunity or impulseMlp to any values unless Boosters are used, so those values can be manipulated directly if necessary.
74. New and cleaner default values for BehaviourPuppet. See the "Puppet" and "Puppet (with Fall)" prefabs.
75. Added PuppetMasterHumanoidConfig ScriptableObject and the "Humanoid Config" demo scene. This enables you to easily share PuppetMaster properties, including individual muscle props between humanoid puppets.
76. Added maxRigidbodyVelocity to BehaviourPuppet to prevent ragdolls shooting off to space when the character controller goes through supernatural acceleration (starting to jump or changing direction fast) and the puppet collides with something and gets unpinned at that time.

Fixes

63. Fixed a null reference error with target mapped state when an object was removed from target hierarchy.
64. Muscle mass will be accounted for in collision damage calculations, which will make heavier puppets more resistant as expected.
65. Fixed a bug with multiple MuscleCollisionBroadcaster components added to the muscles.
66. Fixed a bug with Unity5.5 requiring using UnityEngine.Profiling to be added to PuppetMaster.

- 67. Puppets will always get up successfully if they have not collided with anything on the damage layers.
- 68. Fixed a bug that did not let puppet Rigidbodies sleep if mode was set to Dead.
- 69. Fixed hanging limbs infinitely dangling about when muscle weight set to 0 and muscle damper > 0.
- 70. Fixed SubBehaviourCOM Array out of range errors when muscles added to the puppet.

Changes

- 1. BehaviourPuppet will unbalance if muscle state pinWeightMlp < 1 instead of 0.5. The old value caused puppets to not unbalance sometimes even if they drifted very far from their target.
- 2. BehaviourPuppet will unbalance if muscles that have their pin weight set to 0 drift past knock out distance from their targets.
- 3. Updated minimum supported Unity version to 5.3.6f1.

Version 0.5 (13.10.2016)

Upgrade Guide

7. **MAKE A BACKUP!** Open a new scene, delete the previous version and reimport.

Improvements

77. Added the “Melee Grab” demo scene and Grab.cs to demonstrate grabbing other puppets.
78. Added “Blend Mapping Speed” to BehaviourFall to make it possible to edit the speed at which the behaviour will blend in mapping weight on activation.
79. Added PropRoot.DropImmediate() and a prop root swapping example using that to the “Prop” demo.
80. Joint breaks will automatically remove muscles from PuppetMaster.
81. Added “blockTargetAnimation” bool to PuppetMaster.RemoveMuscleRecursive(), that will block Mecanim from animating detached bones.
82. Added “removeMode” enum to PuppetMaster.RemoveMuscleRecursive(), that will enable you to choose between Sever, Explode and Numb options.
83. Added the “Remove Muscles” scene to demonstrate shooting of puppet body parts.

Fixes

1. Fixed a bug with “Dead Muscle Weight” not applied when setting PuppetMaster.state to Dead for an unpinned puppet.
2. No more error when all muscles removed from PuppetMaster.
3. Fixes to muscle adding and removing.
4. PuppetMaster will not change the layer of props anymore when they are picked up.

Version 0.4 - (20.06.2016)

Upgrade Guide

8. **MAKE A BACKUP!** Open a new scene, delete the previous version and reimport.

Improvements

84. Added the Goblin Archer (2.5D Puppet) integration package to "Plugins/RootMotion/PuppetMaster/_Integration". Import the free "Goblin Archer Cartoon Character" [package](#) from the Asset Store.
85. Added "Puppet Respawnning" demo scene and Respawnning.cs demo script.
86. Removed BehaviourPuppet.muscleRelativeToPinWeight AnimationCurve. Use BehaviourPuppet.unpinnedMuscleWeightMlp instead for better performance and simplicity.
87. BehaviourPuppet and BehaviourFall can now be used in arbitrary gravity worlds.
88. Added the "Melee Spherical" demo scene.
89. Added the "Death Procedures" demo scene.
90. Added the "UNet" integration package.

Fixes

5. Removed BehaviourPuppet.state from the Inspector, it was accidentally left editable there.
6. Fixed a bug with changing BehaviourPuppet.canGetUp while PuppetMaster.state was Dead.
7. Fixed bugs with deactivating/activating characters by parenting them to inactive hierarchies or calling SetActive(false).
8. Fixed bugs that broke PuppetMaster when state/mode switching was interrupted.
9. Fixed 1 frame flicker that might have occurred when Animator updateMode was set to AnimatePhysics and state was switched from Dead to Alive in a non-fixed frame.

Version 0.3 (22.01.2016)

Upgrade Guide

9. **MAKE A BACKUP!** Open a new scene, delete the previous version and reimport.
10. If you were using BehaviourPuppet.canActivate, you should set BehaviourPuppet.normalMode to "Kinematic".
11. If you were using BehaviourPuppet.mapOnlyOnContact, you should set BehaviourPuppet.normalMode to "Unmapped".
12. To get rid of multiple expensive SendMessage/ BroadcastMessage calls per frame, OnPuppetMasterRead, OnPuppetMasterWrite and OnPuppetMasterFixTransforms will not be called anymore. Use PuppetMaster.OnRead, PuppetMaster.OnWrite and PuppetMaster.OnFixTransforms delegates instead. See the IKBeforePhysics.cs and IKAfterPhysics.cs for reference. If you add any IK components to the Target hierarchy in runtime after PuppetMaster has initiated, you need to add them manually to the PuppetMaster.solvers generic list.
13. If you are using Final-IK, wait until Final-IK 1.3 becomes available (will be updated simultaneously) and import the latest Final-IK Bridge from the unitypackage in Plugins/RootMotion/PuppetMaster/_Integration.
14. If your puppet starts sliding when getting up, set "Get Up Offset Prone" and "Get Up Offset Supine" to Vector3.zero in BehaviourPuppet.
15. If you have used the CharacterMeleeDemo character controller, change UserControlPuppet to UserControlMelee and assign the "Hit Key".

Improvements

91. Created the first version of the [bridge between PM and UMA2](#). Import to a project with both PuppetMaster and UMA2.
92. Added a warning if Target position doesn't match with the PuppetMaster's position at initiation.
93. Added a warning if any of the muscle joint positions don't match with their target's positions (right-click on the PuppetMaster component's header and select "Fix Muscle Positions" to fix this issue).
94. Added a warning if mass variation between the ragdoll Rigidbodies is greater than 100.
95. Added a warning if one of the "Ground Layers" is included in the "Collision Layers" of BehaviourPuppet.
96. Added a warning if one of the ragdoll bones is on the same layer as the character controller.
97. Added a warning if one of the ragdoll bones is on a layer that is not set to ignore the character controller layer.

98. Improved blending from ragdoll to getting up. Puppets can now get up with much less BehaviourPuppet.getUpKnockOutDistanceMlp, increasing collision-reaction fidelity while getting up.
99. Considerably improved the performance and stability of BehaviourPuppet.
100. Named the "Muscle Group Overrides" in BehaviourPuppet's Editor so the right one could be more easily found.
101. New larger header attributes (easier to read, especially when dealing with edited prefabs that have some fields in bold).
102. BehaviourPuppet will activate itself on initiation only if it is enabled at that time. That enables you to start from another behaviour such as Fall when you disable BehaviourPuppet in the Editor.
103. Added "Max Collisions" value for BehaviourPuppet as an optimisation. The behaviour will not process more collisions than this in each physics step.
104. Added the "LookAtIK" demo to the Final-IK Bridge.
105. Added the "AimIK" demo to the Final-IK Bridge.
106. The demo character models can now be replaced with any Humanoid character in the scene, fbx or ragdoll simply by going to the "Character Controller" gameobject, assigning a "Replace Character Model" and clicking on "Replace".
107. Improved puppet-puppet head-on collision handling, no more bouncing back from the standing bot.
108. Added the "Creating Ragdolls In Runtime" demo scene and script.
109. BehaviourFall now keeps the Target close to the ragdoll. That will help with camera scripts and SkinnedMeshRenderer culling.
110. Added PuppetMaster.state to make it as easy as possible to switch between Alive, Dead and Frozen states. Frozen means all physics components will be deactivated when the puppet is killed and rigidbody velocities below a threshold and unnecessary calculations skipped.
111. Added the "Killing" demo scene.
112. Added an interpolated puppet example to the "Puppet Extended" demo scene.
113. Added warnings to PuppetMaster when Animator.cullingMode is not "Always Animate" or SkinnedMeshRenderer "Update When Offscreen" is false.
114. Simplified the Prop component.
115. Extended the Melee demo, added walls, collision objects and the Teddy to demonstrate bumping into larger and heavier characters.
116. Added the Final-IK Bridge, UMA2, Ootii's Motion Controller v2 and others to "Plugins/RootMotion/PuppetMaster/_Integration" as unitypackages.

Fixes

1. BipedRagdollCreator now forces joint anchors to Vector3.zero.
2. Behaviours will not fail when UMA replaces the Animator in runtime.
3. Removed JointDriveMode warnings from Unity 5.3 and later.
4. Fixed Grounding the Target when getting up.

5. Fixed a bug that twitched the puppet when “Can Activate” and “Deactivate Automatically” were selected.
6. Fixed a Null Reference Exception when a Booster was created in runtime.
7. Fixed negative collider sizes created by BipedRagdollCreator that were a problem with Unity 5.4.0B1.
8. BipedRagdollCreator will not let itself to be added on any other gameobject but the root of the character.
9. Fixed a bug with PropRoot and assigning currentProp at Start();
10. PuppetMaster will notify you if you try to run it in Unity 5.1 (requires at least 5.2.2).
11. Fixed a bug with the Target not mapped to the ragdoll each frame when ragdoll bones were set to interpolate.
12. FixTransforms will work for Props even when PuppetMaster.fixTransforms == false, because they are most likely always unanimated.
13. Removed PuppetMaster.broadcastGroundCollisions.
14. Muscles with Pin Weight set to 0 will also unpin the puppet when they get too far.
15. Disabled a bug with internal collisions not being ingored when internalCollisions == false and switching from Disabled to Active or Kinematic mode.
16. Setting PuppetMaster.mode to Disabled or Kinematic will only execute when the behaviours allow it. That means you will be able to safely Disable a puppet based on distance to another puppet without the puppet getting disabled while in Fall behaviour or getting up.
17. Fixed BehaviourPuppet.unpinnedMuscleWeight not working when BehaviourFall was also used.
18. Made BipedRagdollCreator work when “Optimize Game Objects” used.

Changes

1. Changed BehaviourPuppet.canActivate and BehaviourPuppet.deactivateAutomatically to a single enum: BehaviourPuppet.normalMode.
2. To get rid of multiple expensive SendMessage/ BroadcastMessage calls per frame, OnPuppetMasterRead, OnPuppetMasterWrite and OnPuppetMasterFixTransforms will not be called anymore. Use PuppetMaster.OnRead, PuppetMaster.OnWrite and PuppetMaster.OnFixTransforms delegates instead. See the IKBeforePhysics.cs and IKAfterPhysics.cs for reference. If you add any IK components to the Target hierarchy in runtime after PuppetMaster has initiated, you need to add them manually to the PuppetMaster.solvers generic list.
3. Moved SolverManager to RootMotion namespace, allowing it to be used by other assets besides Final IK.

Version 0.2 (10.12.2015)

Upgrade Guide

16. **MAKE A BACKUP!** Open a new scene, delete the previous version and reimport.
17. “Collision Layers”, “Collision Threshold” and “Walkable Layers” have been moved from PuppetMaster to BehaviourPuppet (“Walkable Layers” renamed to “Ground Layers”). They need to be reassigned so before importing 0.2, make a note of those settings in PuppetMaster.

Improvements

18. Added Collision Resistance Multipliers to the BehaviourPuppet. You can now specify how much objects unpin the puppet based on their layers.
19. PuppetMaster “Target Root” disappeared from the Inspector. It will now be found automatically. This simplifies setup process for custom rigs.
20. PuppetMaster “Behaviour Root” disappeared from the Inspector. It will now be found automatically. This simplifies setup process for custom rigs.
21. Final IK components and your own scripts using OnPuppetMasterRead/Write can now be added to every gameobject in the Target hierarchy (disable this by setting puppetMaster.broadcastMessages to false to improve performance, but all IK/script then need to be on the root gameobject of the Target hierarchy).

Fixes

19. Fixed some bugs with removing components when setting up PuppetMaster.
20. Removed JointDriveMode obsolete warnings from Unity 5.3.
21. BipedRagdollCreator now looks for an Animator in the entire hierarchy.
22. Setting up PuppetMaster now parents the rig to the same parent that the PuppetMaster gameobject was parented to.
23. Setting up PuppetMaster will not remove Cloth colliders on in the target rig.

Changes

1. Moved the animator states required by BehaviourPuppet and BehaviourFall to Sub-State Machines in the demo AnimatorControllers so they are easier to copy to your own controllers. When you copy the “BehaviourPuppet” Sub-State Machine to your own controller, just make a transition from it to the state you wish to go to when the puppet has got up. No need to make a transition from the “BehaviourFall” SSM.
2. Moved collision and ground layer masks and collision threshold from PuppetMaster to BehaviourPuppet. This simplifies setup process for custom rigs and improves performance.

BETA (0.1) - 18.11.2015

Initial Release