

implementations also support new workflow paradigms, including layered animation and motion-path manipulation of articulated bodies.

[0009] In some implementations, an animation method includes: providing a display environment for presentation on a display device; providing a body for display in the display environment; and determining a motion path for a first portion of the body relative to a second portion of the body, wherein determining the motion path comprises: displaying a curve in the display environment that defines the motion path in space over time, wherein displaying the curve comprises: determining points along the motion path at discrete sample times; rendering the points to define the curve through space over time; and dilating the curve about a point in space to improve visibility of the curve in the display environment.

[0010] In some implementations, an animation includes: providing a display environment for presentation on a display device; providing a body for display in the display environment; providing a first motion path for a first portion of the body relative to a second portion of the body; providing a second motion path for the first portion of the body relative to a second portion of the body; and providing a mechanism for animating the first portion of the body to follow either the first or second motion path.

[0011] In some implementations, a method of creating expression graphs for an animation system includes: providing a graphical user interface; receiving a first node selection from a plurality of node types; receiving a second node selection from the plurality of node types; displaying graphical representations of the selected nodes in the graphical user interface; and providing a connection mechanism for enabling a user to connect at least one output of the first node with at least one input of the second node to form a graphical structure that represents an unified generalized expression graph with cycles.

[0011a] In some implementations, an animation method comprises: providing a display environment for presentation on a display device; providing a camera view of a body in the display environment, the body including at least one point; providing, in the camera view of the body, a motion path of the point; associating one or more control mechanisms with the motion path, the control mechanisms being configured to control a movement of at least a portion of the body in space and a rate of the movement in time; and in response to an input received through the one or more control mechanisms, animating the body based on the motion path.

[0011b] In some implementations, a system comprises: one or more processors configured to perform operations comprising: providing a display environment for presentation on a display device; providing a camera view of a body in the display environment, the body including at least one point; providing, in the camera of the body, a motion path of the point; associating one or more control mechanisms with the motion path, the control mechanisms being configured to control a movement of least a portion of the body in space and a rate of the movement in time; and in response to an input received through the one or more control mechanisms, animating the body based on the motion path.

[0011c] In some implementations, a computer program product is stored on a non-transitory storage device, operable to cause one or more processors coupled to the storage device to perform operations comprising: providing a display environment for presentation on a display device; providing a camera view of a body for display in the display environment, the body including at least one first point; providing, in the camera view, a first motion path of the first point; associating one or more control mechanisms with the first motion path, the control mechanisms being configured to control a movement of least a portion of the body in space and a rate of the movement in time; and in response to an input received through the one or more control mechanisms; animating the body based on the first motion path.

[0012] In some implementations, a method of creating an expression graph for an animation system includes: providing a text-based programming language for specifying expression graphs for an animation system; executing a program developed with the programming language to generate an expression graph; and animating a body in a display environment using the expression graph.

[0013] In some implementations, an animation method includes: providing a display environment for presentation on a display device; providing a first body for display in the display environment; providing a second body for display in the display