

Character Animation: A Tutorial Approach

CADCIM Technologies

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**Character Animation: A Tutorial Approach
Sham Tickoo**

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DEDICATION

*To teachers, who make it possible to disseminate knowledge
to enlighten the young and curious minds
of our future generations*

*To students, who are dedicated to learning new technologies
and making the world a better place to live in*

THANKS

*To the faculty and students of
Purdue University Calumet for their cooperation*

To employees of CADCIM Technologies for their valuable help

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Preface

Character Animation

Character animation is a technique of animating characters. In today's digitally advanced world, computer graphics is expanding its horizon at a fast pace. In such a scenario, character animation plays a vital role in producing animated movies, advertisements, 3D games, and various other animated products. Character animation is a creatively distinct technique that creates different types of animation with respect to the body movements. While animating a character using this technique, an animator has to understand how the character moves, looks like, and interacts with the environment.

Character Animation: A Tutorial Approach textbook has been written to help the users learn the basic animation principles and techniques required to animate a character. You can animate characters using various software packages such as Maya, 3ds Max, and so on. In this textbook, the author has used Autodesk 3ds Max as the platform to animate a character. Various principles and techniques of animation have been explained through tutorials supported by relevant textual description. This makes the process of learning easy and interactive.

This textbook will help you unleash your creativity, thus enabling you to transform your imagination into reality with ease. The textbook caters to the needs of both novice and advanced users of the software. Written with the tutorial point-of-view and learn-by-doing theme, this textbook is ideally suited for learning at your convenience and pace.

The main features of this textbook are as follows:

- **Tutorial Approach**

The author has adopted the tutorial point-of-view and the learn-by-doing approach throughout the textbook. This approach helps the users learn the concepts and techniques quickly and easily.

- **Real-World Models as Projects**

The author has used about 25 real-world modeling and animation projects as tutorials in this textbook. This will enable the readers to relate the tutorials to the real-world models in the animation and visual effects industry. In addition, there are about 30 exercises that are also based on the real-world animation projects.

- **Tips and Notes**

Additional information related to various topics is provided to the users in the form of tips and notes.

- **Learning Objectives**

The first page of every chapter summarizes the topics that will be covered in that chapter. This will help the users to easily refer to a topic.

- **Self-Evaluation Test, Review Questions, and Exercises**

Every chapter ends with a Self-Evaluation Test so that the users can assess their knowledge of the chapter. The answers to the Self-Evaluation Test are given at the end of the chapter. Also, the Review Questions and Exercises are given at the end of each chapter and they can be used by the Instructors as test questions and exercises.

- **Heavily Illustrated Text**

The text in this book is heavily illustrated with about 500 diagrams and screen captures.

Symbols Used in the Text



The author has provided additional information to the users about the topic being discussed in the form of notes.



Special information and techniques are provided in the form of tips that helps in increasing the efficiency of the users.

Formatting Conventions Used in the Text

Please refer to the following list for the formatting conventions used in this textbook.

- Names of tools, buttons, options, rollouts, menu, panels, button, and tabs are written in boldface.
- Names of dialog boxes, window, drop-down lists, spinner, text box, areas, check boxes, and radio buttons are written in boldface.
- Values entered in spinner are written in boldface.
- Names of the files saved are italicized.
- The methods of invoking a tool/option from the menubar, Main Toolbar, or the shortcut keys are given in a shaded box.

Example: The **Select and Move** tool, the **Name and Color** rollout, the **Modify** tab, the **Application** menu, **Command Panel**, **Modify** tab, **Create** button, and so on.
Example: The **Time Configuration** dialog box, the **Selection-Filter** drop-down list, the **Length** spinner in the **Parameters** rollout, **Alignment** area, the **Ignore Backfacing** check box, **X** radio button and so on.

Example: Enter the value **0.02** in the **Falloff** spinner.

Example: *c03tut1.max*

Menu bar:	Rendering > Render Setup
Main Toolbar:	Render Setup
Keyboard:	F10

Naming Conventions Used in the Text

Tool

If you click on an item in a panel of the ribbon and a command is invoked to create/edit an object or perform some action, then that item is termed as **tool**.

For example:

Select and Move tool, **Mirror** tool, **Select and Link** tool

Render Setup tool, **Select and Rotate** tool, **Unlink Selection** tool

Select and Uniform Scale tool

If you click on an item in a panel of the menubar and **Main Toolbar** is displayed wherein you can set the properties to create/edit an object, then that item is also termed as **tool**, refer to Figure 1.

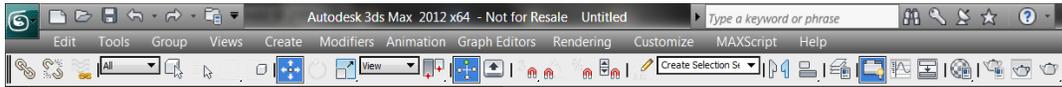


Figure 1 Tools in the Main Toolbar

Button

The item in a dialog box that has a rectangular shape like a button is also termed as **Button**. For example, **OK** button, **Cancel** button, **Add** button, and so on. If the item in a dialog box or window is used to exit a tool or a mode, it is also termed as button. For example, **OK** button, **Close** button, **Yes** button, and so on, refer to Figure 2.

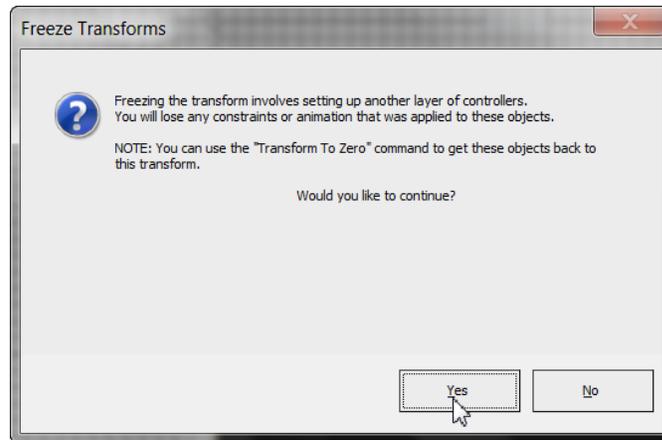


Figure 2 Choosing the Yes button in the Freeze Transforms dialog box

Dialog Box

In this textbook, different terms are used to indicate various options, refer to Figure 3 for different terminologies used in a dialog box.

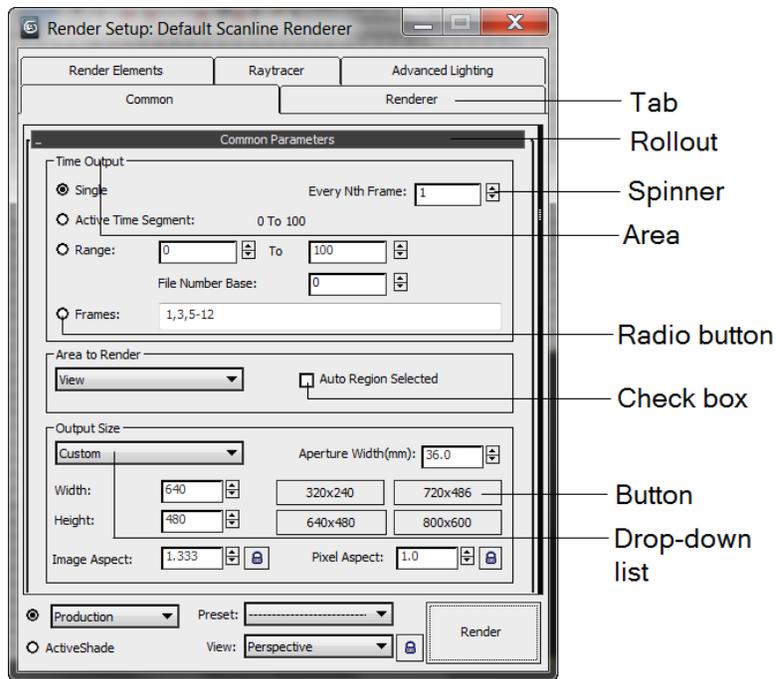


Figure 3 Different terminologies used in a dialog box

Drop-down List

A drop-down list is one in which a set of options are grouped together. You can set various parameters using these options. You can identify a drop-down list with a down arrow on it. For example, **Type Selector** drop-down list, **Units** drop-down list, and so on; refer to Figure 4.

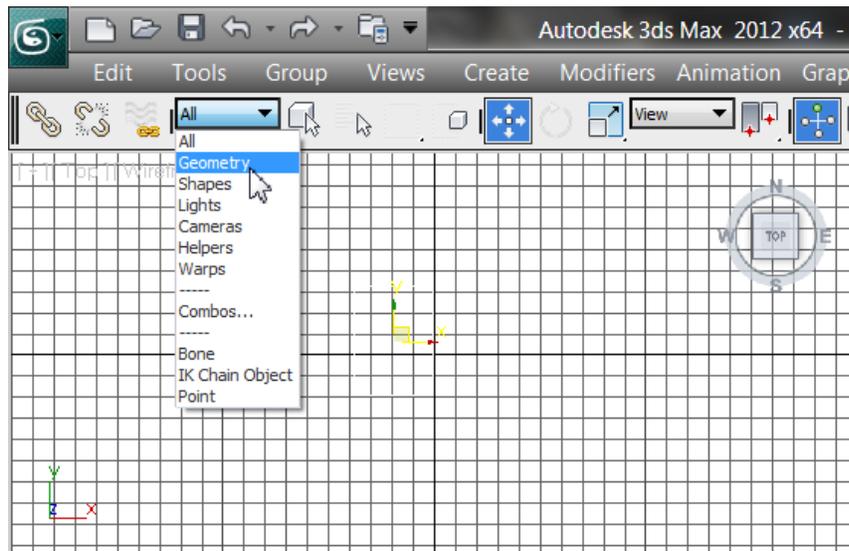
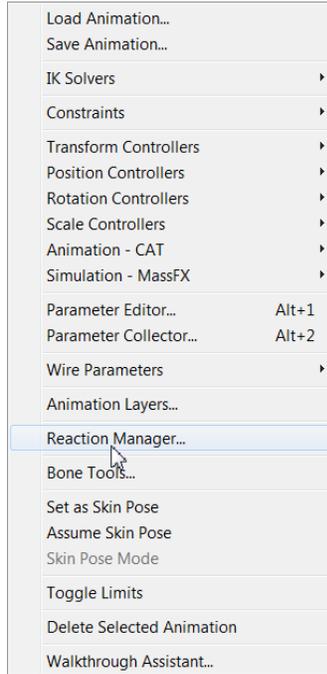


Figure 4 Choosing **Geometry** option from the **Selection Filter** drop-down list

Options

Options are the items that are available in shortcut menu, drop-down list, dialog boxes, drop-down lists, and so on. For example, choose the **Reaction Manger** option from the flyout; refer to Figure 4.



*Figure 4 Choosing **Reaction Manager** option from the flyout*

Main Command Panel

The Main Command Panel, as shown in Figure 5. By default, it is displayed at the right of the 3ds Max window.

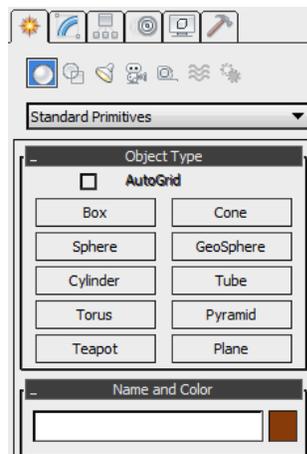


Figure 5 The Main Command Panel

Free Companion Website

It has been our constant endeavor to provide you the best textbooks and services at affordable price. In this endeavor, we have come out with a free companion website that will facilitate the process of teaching and learning of Character Animation. If you purchase this textbook from our website (www.cadcim.com), you will get access to the companion website. The following resources are available for the faculty and students in this website:

Faculty Resources

- **Technical Support**

You can get online technical support by contacting techsupport@cadcim.com.

- **Instructor Guide**

Solutions to all review questions and exercises in the textbook are provided in this link to help the faculty members test the skills of the students.

- **PowerPoint Presentations**

The contents of the book are arranged in PowerPoint slides that can be used by the faculty for their lectures.

- **Part Files**

The part files used in tutorials are available for free download.

If you are a faculty member, please contact the publisher at sales@cadcim.com or the author at stickoo@purduecal.edu or tickoo525@gmail.com to access the website that contains the teaching resources.

Student Resources

- **Technical Support**

You can get online technical support by contacting techsupport@cadcim.com.

- **Part Files**

The part files used in tutorials are available for free download.

- **Rendered Images**

If you do an exercise or tutorial, you can compare your rendered output with the one provided in the CADCIM website.

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