Overview This book surveys algorithms and programming techniques for specifying and generating motion for graphical objects. It is primarily concerned with three-dimensional (3D) computer animation. The main audience is advanced undergraduate or beginning graduate computer science students. The fundamental objective of computer animation programming is to select techniques and design tools that are expressive enough for animators to specify what they intend, yet at the same time are powerful enough to relieve animators from specifying any details they are not interested in. Obviously, no one tool is going to be right for every animator, for every animation, or even for every scene in a single animation. Computer graphics animation; many animation systems are still based on key-framing and in-betweening [13]: master animators draw the key frames of a sequence to be animated and assistant animators complete the intermediate frames by inferring the movements occurring between the keys. Knowing the movements underlying human actions would provide an automated method for interpolating between key frames, resulting in a faster and simplified animation pipeline. ... Several concepts and techniques applied in computer animation are employed by users of first programming environments without realizing that fact. Computer Animation as a Vehicle for Teaching Computational Thinking. Conference Paper. The animations depict basic techniques discussed in the text. The animations are in a variety of formats including: animated GIFs, MPEGs, and Quicktime Movies. Java3D Code. This is some sample Java3D code used to implement some of the algorithms. Errata by Chapter. [Many thanks to the readers who have contributed to this list, most notably Nelson Max.] Each technique requires a certain amount of effort from the animator and from the computer. This distribution of workload between the animator and the computer is a distinguishing characteristic among animation techniques. Intuitively, low-level techniques tend to require more user input and employ fairly straightforward computation. High-level algorithms, on the other hand, require less specific information from the animator and more computation. This book does not address the issues concerned with a particular venue, but it does present the algorithms and techniques used to do animation in all of them. In computer animation, any value that can be changed can be animated.