

character studio® 3 is the latest release of the powerful extension to **3d studio max®**, the world's best-selling professional 3D animation and modeling solution. **character studio 3** provides more ways to build and refine skeleton and skins than any other product, including groundbreaking tools for creating crowds.

Now you can quickly animate a school of fish, a swarm of bees, or any collection of humanoid creatures. Create astounding crowd scenes, while you retain total control over how each individual interacts with its fellow creatures, the terrain, and anything they encounter in their environment.

Physique is an incredibly fast skinning system, allowing you to meld a model's skin to animated bones with amazing speed.

Running under Window 98 or Windows NT, character studio provides a uniquely rich palette of tools for motion capture, free-form animation, and footstep driven animation. These tools provide a high-quality, cost-effective way to populate your **3d studio max** worlds with characters that animators can easily infuse with dynamic movement and incredible personality.

Using **character studio 3** you can achieve all your goals: fabulous skeletal solutions, fast workflow, superior skin and the perfect balance of quality and performance for each production.



Image courtesy of John Zwicker.

features

- *Crowd™*: the industry's richest set of tools available for behavioral animation
- *Intelligently control large groups of characters and creatures, such as schools of fish, flocks of birds, or groups of otherworldly creatures*
- *Animate crowds, program behaviors, while retaining total control over every individual character and element*
- *Biped: a hybrid motion capture/keyframe/footstep-driven animation system*
- *Enhanced inverse kinematics for smooth, natural hand and foot movements*
- *Total performance breakthrough for Physique™: an interactive skinning system*
- *Physique provides naturalistic skin deformation and precise control over muscle bulging and tendon action*
- *Combines breakthrough motion capture, editing, and blending technology with traditional keyframe animation*
- *Powerful Motion Flow Editor that accelerates non-linear animation development*
- *Patented footstep-driven animation saves time roughing in movements*
- *Support for all 3d studio max geometry types, including Bezier patches*

crowd™ features

- advanced behavioral animation

- Handles large groups of Biped characters, as well as non-terrestrial creatures designed with **3d studio max**
- Includes integrated behavioral system, delegate object, crowd helper, and behaviors
- Crowd solver creates position, rotation, and scale keys for all delegates and manages collisions
- Extensive set of modifiable attributes such as average speed, turning, and banking
- Edit attributes for multiple selected delegates
- Scattering tool for cloning, distributing, and orienting delegates randomly across a surface or within a volume to set up initial conditions
- MAXScript access to set and get delegate attributes, create cognitive controller and clip controller logic, or create new behaviors

- behaviors

- Behaviors available include space warp, avoid, orientation, path follow, repel, seek, speed vary, surface arrive, surface follow, wall repel, wall seek, wander, and user-created
- New behaviors can be designed with MAXscript
- Unlimited mixing of behaviors for any character

integration with biped™

- Non-linear motion flow graphs ensure that Bipedes move through terrain and around obstacles while staying on the ground
- Shared motion flow graphs enable hundreds of Bipedes to move together with unique results for each character
- Delegate speed determined by the rate of the Biped's motion

biped features

- motion capture

- Import data either from positional/optical markers in **character studio's** CSM format or from rotational hierarchies in Biovisions's BVH format regardless of Biped bone length
- Automatically reduce keyframes while still preserving the most significant attributes of motion capture data
- Extract footsteps during import to lock character's feet to the ground
- Import motion capture as free form animation that you can alter without footstep constraints
- Progressively refine motion capture data by projecting it onto existing footsteps and free-form segments
- Paste poses and keyframes from motion capture buffer onto a Biped character at any frame
- Convert hundreds of motion capture files into Biped format in one step using batch conversion
- By simply saving and loading, you can easily integrate existing animations onto Biped skeletons containing totally different bone lengths

- motion flow editor

- Automatically assemble hundreds of clips into a large motion flow graph showing every possible transition
- Select blend points and modify their influence for each transition to rapidly deliver best-case results

- motion flow editor (continued)

- Use per-transition probability give Biped autonomous control over cycling its own animations
- Share motion flow networks between large numbers of characters to minimize memory usage, and yield unique but predictable results for each character
- Create a variety of unique scripts and assign random start probability per clip to simulate autonomous movement
- Click once to unify motion flow scripts into a standard Biped animation

- free-form animation

- Powerful keyframe animation tools
- Easily view and modify character motion in current view without regard to camera position
- Modify character motion using layers of animation on top of an initial sketch, then collapse animation into a single set of keyframes
- Expand or collapse animation tracks for Biped arms, legs, spine, neck, and tail
- Expand tracks to set keyframes independently for each joint or collapse tracks to reduce the complexity of modifications
- Adjust tension, continuity, bias, ease-in and ease-out characteristics of each keyframe to adjust character motion

- track operations

- Copy and paste any Biped track onto any other Biped character or body part
- Separate motion stored within layers to recombine on other Bipedes or reorder within the same Biped
- Copy and paste posture of a limb or entire pose from any frame across Biped body or onto different character
- Paste poses, postures or tracks to opposite side of character's body

- advanced inverse kinematics

- Animate limbs in a realistic, precise, and easy manner using natural inverse kinematic (IK) points
- Quick intuitive tools to specify up to 6 animatable pivot points on each hand and foot for rapid, natural movements
- Define lifelike IK paths for characters to follow, rather than robot-like linkages
- Dynamically attach and detach an object to a character's hands or feet
- IK attachments to **3d studio max** objects make throwing and catching a ball, rowing a boat, or dancing with another character easier than ever
- Combine IK motions with conventional forward kinematic joint rotations for natural swinging hand and foot movements

footstep driven animation

- Easily create a variety of motion patterns
- Place footprints to control timing and position of two-legged character motion
- Preserve nuances by adapting keyframes to match changes in footstep timing or placement
- Characters move, rotate, and balance about their center of mass
- Bipedal mechanics help characters walk with biomechanically correct relationships between ankle, leg, and pelvis
- Characters bank into turns by default as a function of speed and path curvature

3D character motion mapping and splicing

- Apply footsteps and animation of one Biped character to any other Biped regardless of height, proportion, or physical differences
- Create motion sequences once and reuse them with any other character
- Use dimensional scaling to adapt footstep placement for different leg and pelvis size
- Adapt gravity to the relative stance of each Biped character
- Splice motions together by copying and inserting sequences of footsteps and associated upper body movements
- Generate seamless motion cycles by copying and reinserting selected sequences

scripting

- Develop scripts that seamlessly incorporate many Biped animation files
- Save scripts to load them onto any Biped character
- Build motion library from saved scripts
- Use MAXScript for access to all Biped character data, including creation, load, save, set and get keys and key attributes, footprints, motion capture data, and motion flow I/O

clip features

- New global and master motion clip tools
- Clip tools enable you to set up and control arbitrary 3d studio max objects with states including speed, acceleration, pitch, pitch rate, and heading rate
- Clip Controller provides realistic animation of flocks of birds, schools of fish, or any collection of non-terrestrial creatures

physique™ features

- **optimized performance**
- Accelerated load times, stack updates, and viewport interaction speed
- Achieve blazing speeds with multi-threaded support for multi-processor systems
- Stack update switches save time by reducing needless updates

free-floating bones

- Use free-floating bones not linked to a hierarchy for facial animation, muscle effects, and breathing
- Create spline-based bones
- Use all deformation envelopes and vertex-weighting tools with free-floating bones

skin attachment and sliding

- Attach skin with intuitive 3D deformation envelopes that show exactly how bones affect surrounding skin
- Stretch, shift, and shape each envelope independently
- Save time modifying or replacing skin by reusing envelope settings
- Pinch and stretch skin to create creases or remove bunching around joints
- Fine-tune sliding on both inner and outer sides of each joint

weighted blending

- Ensures that skin moves evenly and naturally around joints
- Automatically perform weighted blending with any number of overlapping deformation envelopes
- Fine-tune skin behavior by adjusting weight applied by each envelope
- Select basic blending to preview real-time game characters

muscle bulging

- Generate muscle bulges based on skeleton joints and joint angles
- Define muscle profile at any point using the cross-section editor
- Give model as much detail as desired for any position
- Define overall muscle movement through muscle cross-sections and joint angles
- Control influence, weight, and power of bulge as joints bend

tendon action

- Control tendons for life-like effects
- Link muscle movement to bones
- Deform muscles across multiple links
- Selectively assign portions of skin to move with individual bones
- Pull skin to follow limb motion, using angular pull for effects such as chest rising as arms move up
- Pinch skin to follow limb bending, such as pectoral muscles protruding forward as shoulders shrug
- Stretch skin to follow limb motion, using radial stretch for effects such as tendons appearing when muscular characters lift weights

support for surfaces and polygons

- Choose best geometry type for each character
- Supports all 3d studio max surface types, including NURBS, surface patches, splines and polygons
- Change your mind without sacrificing initial set-up time, since deformation envelopes make it easy to change skin shape or structure

system requirements

- 3d studio max 3.1
- Intel® - compatible processor at 200 MHz minimum, thoroughly multi-threaded; dual Pentium III system recommended
- Windows® 98 or Windows® NT Workstation 4.0
- 128 MB free RAM minimum; 256 MB recommended
- 250 MB hard disk space for swap file (swap file size depends on scene complexity)
- CD-ROM drive

system requirements (continued)

- Graphics card supporting 1024 x 768 at 16-bit color minimum; 24-bit color, 3D graphics accelerator recommended (OpenGL and Direct3D hardware acceleration supported)
- Windows pointing device; optimized for Microsoft Intellimouse
- Optional: sound card and speakers, TCP/IP-compliant network, video input and output devices, joystick, midi instruments, 3-button mouse

All character studio r2.x data files are forward compatible with character studio 3.



additional information

To obtain more information about Discreet systems and software visit the Discreet web site at www.discreet.com or email product_info@discreet.com

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