



Get ready for a cyber-powered

future.



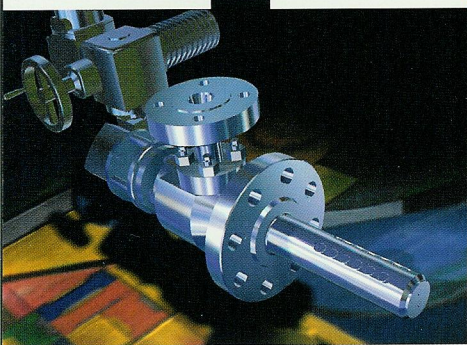
Check out career opportunities in 3D design and animation.

Discover how 3D **multimedia** tools are used to create

- * special effects in movies
- * cool, animated characters in computer games
- * realistic models for conceptual design
- * **interactive** experiences on the **Web**

Read on

to learn more and to get plugged in to resources that can get you started. Then get animated.



“

plug in then get

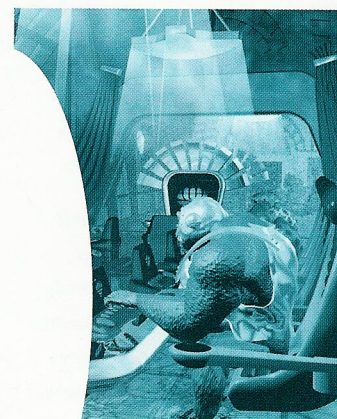
The 3D art scene started booming with the arrival of technologies that made it possible to portray realistic, computer-generated visual effects. Today, breakthrough software tools, such as 3D Studio® and 3D Studio MAX™ from Kinetix™¹ mesh fantasy worlds and reality with **real-time**, high-resolution graphics.

Such high-end graphics tools used to be available only to professionals working on expensive workstations. Now these tools are accessible on high-performance PCs . . . which means you can use them, too!

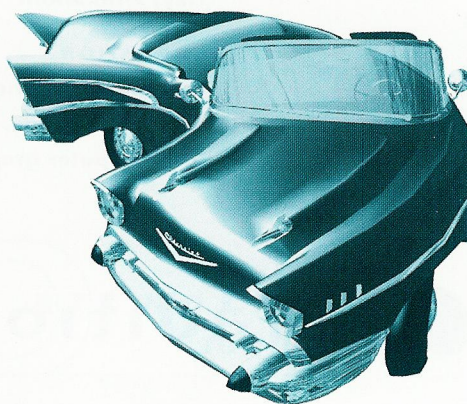
A variety of businesses use 3D computer graphics . . . and they're scrambling for talent. Multimedia companies—firms that produce special effects and animations for TV, movies, **CDs**, computer games, and Web sites—want artistic people who are versed in computer games and appreciate pop culture. Other companies—such as architectural and engineering firms—want creative people who can design realistic 3D models. There's also a demand for talented programmers who develop the tools that make creative visions technically possible.

Try 3D computer design and animation. It could be your ticket to a colorful future.

Words in blue type are defined in the glossary on page 12.

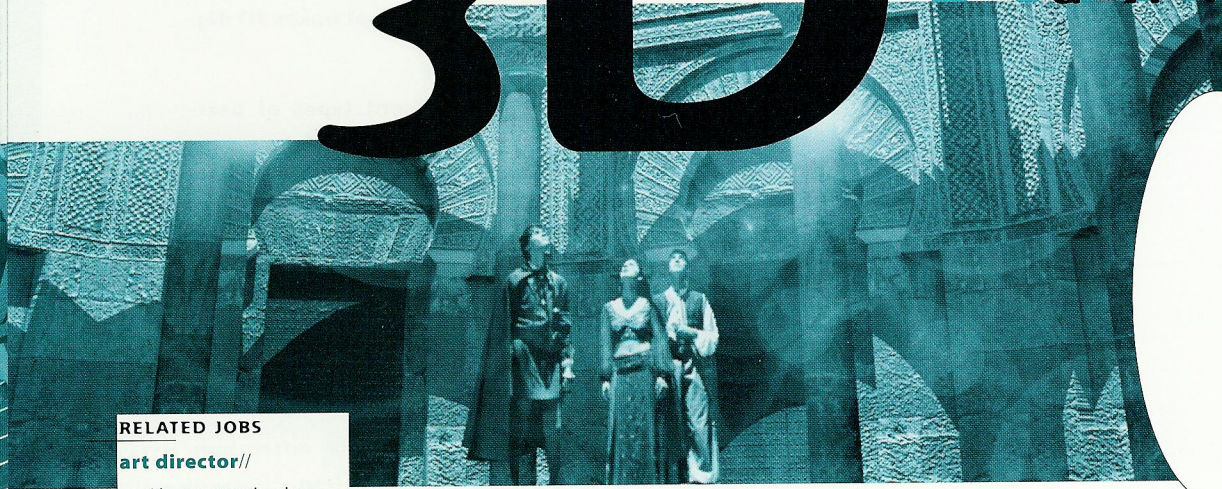


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mated”



¹ Kinetix, the leader in 3D animation for the PC, is a division of Autodesk, Inc.

3D film animator



RELATED JOBS

art director//

provides conceptual and creative direction to meet project design standards, and guides the development of all visual and graphic artwork, sound, animation, and video through regular reviews with artists and other professionals.

videographer//

is responsible for location shots, lighting, actors, props, and other elements that culminate in a camera-recorded action or scene.

sound producer//

selects background music, sound effects, narrations, and voice-overs, and oversees the sound-editing process.

3D characters and special effects are leaping into everything from TV commercials to live-action movies. 3D is especially hot in Hollywood, where full-length animated features such as *Toy Story* are winning Academy Awards®.

Can you create characters with an attitude? Make objects fly through space? Construct fantastical environments bursting with realism? Then your talents are in demand in the film and television industry.

SKILLS

Jobs are plentiful but competition is tough. First master traditional (noncomputer) art and animation skills. Then learn drawing, sculpting, and color theory. Study anatomy and movement. You'll stand out in the crowd if you can sketch rough designs, develop storyboards, and prepare animation layouts.

A flair for using pictures to tell stories and convey emotions is a big plus. So study documentaries and videos to see how images are used to develop humor, suspense, and drama.

EDUCATION

You'll have a head start on some of these skills if you've taken art, photography, film, and computer electives in high school or college.

“we look for visual examples of realistic and cr

An undergraduate degree in art or a related field is becoming increasingly important, but artistic ability and creativity count most. Some entertainment-industry employers are hiring talented students straight out of high school or art college, giving them a chance to learn on the job.

TECH TOOLS

Learn your way around 2D **digital imaging** programs. Familiarize yourself with software that mixes digital imagery with sound effects, narrations, and **voice-overs**.

To outdistance the competition, master two of these 3D imaging and animation techniques: **organic modeling** and **rendering**, lighting, **tiled backgrounds**, and character **animation**. Explore **authoring** programs.

Remember, it's more important to know traditional animation techniques than it is to be technically proficient in 3D programs.

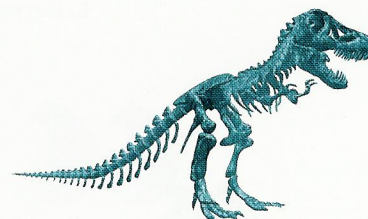
SALARY RANGE

Typically, salaries range from US\$40,000 to \$100,000 annually and up.

ON THE JOB

Be dependable about meeting deadlines. Communicate clearly with others on the creative team. Share ideas.

Hours are long and deadlines demanding, but in this rapidly evolving form of computer art, you can have a lot of fun and be as innovative as your imagination (and the art director) allows.



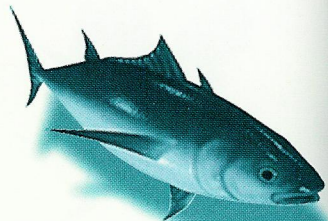
eat
ive

animation...



Frank Foster, Vice President of Multimedia, Sony Pictures Imageworks

3D design



RELATED JOBS

design drafter//

uses information supplied by an engineer or architect to provide design support in developing and revising technical, detailed, electronic drawings of structures, land profiles, equipment, and more.

project manager//

is a licensed engineer or architect who oversees a variety of projects and project teams. Responsibilities also include contacting clients, scheduling, and budgeting.

marketing manager//

uses project drawings and visualizations to prepare promotional materials used in client proposals and multimedia presentations.

Animated 3D virtual models add motion and breathe life into 2D industrial drawings. Visualizations, based on 2D drawings and 3D models, can take you to places where it's physically impossible to go. Walk-through small cafes and towering skyscrapers that haven't been built yet. Flyby future airports that are still being designed.

3D models are used in the design of everything from toys and turbine engines to space shuttles and telecommunication systems. Can you create attention-getting visualizations of these designs for conceptual development and presentations? If so, engineering and architectural firms want to meet you.

SKILLS

3D models simplify complex ideas, and reveal relationships between parts and processes. Making accurate and beautiful visualizations—based on the physical properties of the models—requires both creativity and attention to detail.

Practice traditional (noncomputer) technical illustration and composition. Pay close attention to color, texture, and surfaces.

Develop strong mathematical and analytical skills. Learn how electronic models make it easier to recognize potential design flaws and to facilitate changes.

Experience in computer programming and debugging software helps.

“we want students who have a **strong** des
understanding

EDUCATION

Sign up for art, advertising, math, physical sciences, photography, and computer classes in high school or college.

A computer-science degree is preferred. Some universities offer programs specializing in computer engineering. Or, earn a bachelor's degree in architecture or engineering.

TECH TOOLS

Find out how to create designs on computers with CAD software. Investigate how CAM is used to plan and produce products. Learn CAI to give objects 3D form.

Familiarize yourself with 2D digital imaging and 3D animation, modeling, and rendering programs that transform 2D drawings into moving images.

Practice using color scanners and digital cameras. Experience in video production is a plus.

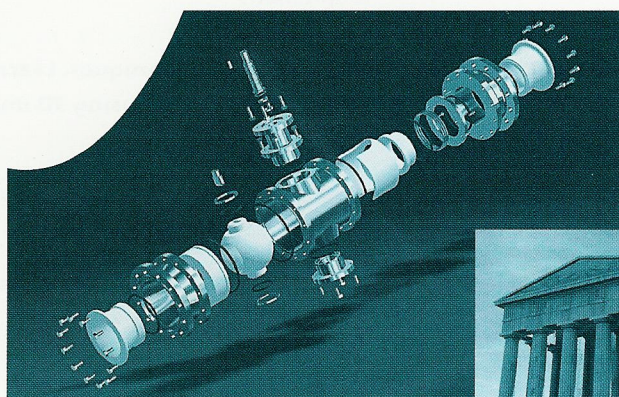
SALARY RANGE

Typically, salaries range from US\$40,000 to \$100,000 annually and up.

ON THE JOB

You'll be working both individually and as part of a team. Make yourself valuable by being accurate and getting projects done on time.

In the process, you'll discover the delight of animating things we see and use every day.



gn in modeling, scale,

and color.



Adam Noble, Principal, CADP

next steps

Here are a few tips and resources to help you navigate your expedition into the world of 3D design and animation. Then, pack up your talent and determination and go for it.

KEEP CURRENT

- Read trade **MAGAZINES**[†] and **BOOKS**.[†] Check out **3D RESOURCES ON THE WEB**.[†]
- Attend **TRADE SHOWS**[†]—scour the conference program to see who's doing what, look at products, meet professionals who are doing what you want to do.
- Join a professional **TRADE ORGANIZATION**.[†] Build a network of contacts.
- Subscribe to **ELECTRONIC MAILING LISTS**[†] and **JOIN NEWSGROUP**[†] discussions. Exchange e-mail with people working in the field.

EDUCATION

Learn computer art in high school—enter local and national competitions. Visit a junior college near you—does it offer a multimedia studies program?

Explore a variety of universities and art **SCHOOLS**[†] that offer a degree program in your chosen specialty or in a related area of study. Confirm the deadline for submitting applications.

Develop skills along with knowledge. To land a job in a multimedia company, you need to show what you can do.

INTERNSHIPS

Internships provide hands-on learning opportunities—usually for set periods of time—with or without pay. Either way, they offer an excellent chance to build valuable job skills.

- Check with local schools and businesses to see which internship programs are available in the field of your choice, and in related industries.
- Research local companies. Be well-informed before you call the company to ask for an informational interview. This also can be done through e-mail and the Web.

JOB PREPARATION

Career-prep assistance is often available through professional organizations. Magazines and books also provide a good source of information on how to write a resume, put together a portfolio and **demo reel** of your best work, make a business card, and create your own Web site.

JOB SEARCH

Learn how to use online resources to complement traditional job-search methods using newspapers and trade magazines. There's plenty of company information online as well as **JOB HUNTING SITES**.[†]

[†] See sampling of resources outlined on adjacent page. More complete listings are available in the World Wide Web version of this brochure at <http://www.ktx.com>.

“... let me see something

moving with

action

RESOURCES ON THE WEB

3DSite
<http://www.3dsite.com>

Computer Animation at AAST
<http://www.bergen.org/AAST/ComputerAnimation>

comp.graphics.animation FAQ
<http://www.ridgecrest.ca.us/fx/cga-faq.html>

The Web Designer
<http://web.canlink.com/webdesign/nl.html>

SCHOOLS

California Institute of the Arts
Valencia, CA
805-255-1050 <http://www.calarts.edu>

Cogswell Polytechnical College
Sunnyvale, CA
408-541-0100 <http://www.cogswell.edu>

Pratt Institute School of Art & Design
Brooklyn, NY
800-331-0834 <http://www.pratt.edu>

Savannah College of Art & Design
Savannah, GA
800-869-7223 <http://www.scad.edu>

BOOKS

Animation from Script to Screen
Shamus Culhane, St. Martin's Press

Becoming a Computer Animator
Mike Morrison, Sams Publishing

Inside 3D Studio MAX™
Steven Elliott & Phillip Miller,
New Riders Publishing

JOB HUNTING SITES

Entertainment Recruiting Network
<http://www.showbizjobs.com/jobs.html>

Yahoo!—Business and Economy: Employment
http://www.yahoo.com/Business_and_Economy/Employment/

ELECTRONIC MAILING LISTS

CG-CHAR (Character Animation) Mailing List
<http://www.cinenet.net/users/rickmay/>

Computer Game Artists (CGA) Mailing List
<http://www.vectorg.com/cga>

3D Studio Mailing List
majordomo@autodesk.com
Type "subscribe 3dstudio" (without quotes) in body of e-mail message.

NEWSGROUPS

alt.3d
comp.graphics.animation
comp.graphics.misc
comp.graphics.packages.3dstudio
rec.arts.animation

MAGAZINES

3D Artist Magazine
505-982-3532 <http://www.3dartist.com>

3D Design Magazine
800-829-2505 <http://www.3d-design.com>

Animation Magazine
818-991-2884
<http://www.imall.com/stores/animag>

Computer Graphics World
800-582-6950 <http://www.cgw.com>

TRADE ORGANIZATIONS

3D Studio/Kinetix User Groups
<http://www.ktx.com/grplist.htm>

International Animated Film Society
(ASIFA—Hollywood) 818-842-8330
http://www.awn.com/asifa_hollywood

TRADE SHOWS

APRIL
Computer Game Developers Conference
Santa Clara, CA <http://www.mfi.com/cgdc>

JUNE
Electronic Entertainment Expo (E3)
Atlanta, GA <http://www.mha.com/e3>

AUGUST
SIGGRAPH
Los Angeles, CA <http://www.siggraph.org>

More complete listings are available on the Kinetix Web site at: <http://www.ktx.com>



and attitude.

Dan Kuenster, Vice President of Animation, 7th Level*

*The Hollywood Reporter Careers in Animation Special Issue, July 1996

glossary

Animation A video made up of individual frames of graphic art, such as computer-generated images. Traditional techniques include paper and clay animation, and cel animation, which involves animating small portions of an image.

Authoring A software tool that defines the complex set of connections that combine media elements (audio, video, etc.) and define the level of interactivity in multimedia products.

CAD Computer-aided design.

CAI Computer-aided imagery.

CAM Computer-aided manufacturing.

CD/CD-ROM Compact Disc or Compact Disc Read-Only Memory, used to refer to discs with a read-only format for storing compressed data in a digital form.

Demo reel A videocassette containing animation or video samples of a person's work—often narrated or accompanied by music.

Digital camera A camera that uses CCDs (charge-coupled devices) and computer memory to take and store photographs, making it easy to place and manipulate images on a computer.

Digital imaging A representation of signals using computer binary forms (0 or 1 values) to create images on the computer screen. Once digitized, elements of images (color, resolution, etc.) can be changed or modified.

E-mail Electronic mail—messages sent with and received by computers.

FTP File Transfer Protocol, an Internet standard for the exchange of files.

Flyby The illusion of flying through space, generated by modeling and animating physical structures in real-time 3D.

HTML Hypertext Markup Language, the basic Web-page instructions that enable documents containing images, text, and other elements to be displayed by browsers.

Interactive/Interactivity Ways for people to interact with multimedia products and online environments. Currently, interactivity allows people to select information, modify elements like music, participate in real-time online video conferences, and more.

Layout A visual guide to illustrate how images and text will be displayed.

Modeling Making wireframe forms for animation, then applying shades and textures.

Multimedia A new art medium that uses multiple forms of communication—audio, video, graphics, and animation—to express ideas and information. Usually includes interactivity.

Net The Internet. The largest international computer network, made up of many smaller linked networks.

Online Taking place on the Net, such as online chat sessions.

Organic modeling Effects such as smoke, liquid, fog, fire, fur, cloth, and so on.

PERL Practical Extraction and Report Language.

Programming Planning or preparing a computer software program to perform a task.

Real-time Transmitting, receiving, and processing images with the results displayed as they occur.

Rendering Using mathematical calculations to blend light sources and add surface textures and other qualities that enhance wireframe outlines to give the illusion of 3D.

Storyboard A scene-by-scene depiction of the story, including detailed sketches with notes about voice-overs, sound effects, and other media elements that accompany the scene.

Tiled backgrounds A textured background, using a GIF, JPEG, or other compression method to reduce file size.

User-interface design The organization and visual display of media elements that allows users to make choices as they navigate through an interactive multimedia product.

Virtual An object or environment (either natural or imagined) that simulates both space and time.

Virtual models Simulated electronic representations of actual objects.

Visualizations Animated images created with software that transforms the physical properties of computer models into moving objects and processes.

Voice-over The oral delivery of a script by an off-screen actor or a voice artist in a sound track.

VRML Virtual Reality Modeling Language, a 3D authoring tool.

Walk-through An animated exterior or interior of a structure, based on architectural plans or sketches.

Web The World Wide Web, a global, hypertext information system on the Internet that uses browsers to access Web pages (a series of screens) on Web sites (that could be created by individuals, companies, or institutions).

kinetix

Kinetix, a division of Autodesk, is a leader in PC-based 3D modeling and animation software—providing a full range of products for digital media and design professionals such as film and video producers, video/computer game developers, Web content developers, architects, engineers, and designers.

To see work created by artists who use these products and to keep up-to-date on the latest software releases,

check out the Kinetix Web site or
call 800-879-4233.

<http://www.ktx.com>

autodesk, inc.

Autodesk is the world's leading supplier of PC-based design software. The company's 2D and 3D design products and data management tools are used in many industries for architectural design, mechanical design, filmmaking, videography, and geographic information systems. The fourth-largest PC-software company in the world, Autodesk has three million customers in more than 120 countries.

Autodesk® products are sold through an authorized channel of resellers and Autodesk Systems Centers who deliver local support, extensive industry knowledge, and training targeted to your needs. Other learning and support resources include three CompuServe forums, the Autodesk Training Center (ATC®) network with more than 1,000 sites worldwide, and an extensive system of user groups. Autodesk Area Education Representatives (AERs) provide information on special educational pricing for Autodesk products. For a referral to the AER in your area, call Autodesk at 800-964-6432, ext. 916.

Browse the Autodesk Web site or for more information about Autodesk products and services, call 800-964-6432.

<http://www.autodesk.com>



visit

<http://www.ktx.com>

to access the growing number of resources added regularly to the online version of this brochure.

CREDITS

COVER

Figure: Martin Foster

Large car: Walter Gurdak

Small spaceship: Warner Interactive (Manchester)

Interior: Designed by Mondo Media for Zork Nemesis, by © Activision

Espresso machine: Cebas Computer

INSIDE COVER

Monopoly car: Westwood Studios

Flying monsters: Warner Interactive (Manchester)

Mechanical part: Jan Hill

Diner: Alfred Woo, Dub Media

INTRODUCTION

Page 1

Game image: Warner Interactive (Manchester)

Chevrolet: Brent Blackett, Autodesk, Inc.

GAMES

Page 2

Earthquake: Rocket Films Ltd.

Chess piece: Robert P. Whitney, Mission Studios Corporation

Page 3

Monster, Monopoly board: Westwood Studios

FILM

Page 4

Interior with figures, Cherub: Jose M. De Espona,
Triplefactor/Reyes-De Espona Infographica

Page 5

Robot in space: Gary Tse

Planets: Andy Murdock/Mechadeus

Dinosaur: Frank Delise, Autodesk, Inc.

DESIGNER

Page 6

Staircase: Ayres Group

Fish: Jose M. De Espona, Triplefactor/Reyes-De Espona Infographica

Page 7

Mechanical parts: Designed by Mondo Media for Zork Nemesis, by © Activision

Parthenon: Jose M. De Espona, Triplefactor/Reyes-De Espona Infographica

WEB DESIGNER & PROGRAMMER

Page 8

Interior, Numbered sphere: Designed by Mondo Media for Zork Nemesis,
by © Activision

Page 9

Planet, Warped planet: David Avgikos, Digimation

RESOURCES

Page 11

Creature: Miguel Lleras

KINETIX

 **Autodesk**

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