Space Rocks 3D Help Contents

Welcome to Space Rocks 3D!

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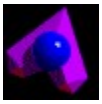
Introduction

Imagine yourself hurtling through space at breakneck speed. Your ship is capable of rotating in all directions. If you had time to look out the window, then you would see all of the beautiful planets that make up our solar system. But you do not have that kind of time. You are totally focused on the task at hand. That task is . . . blasting to bits every rock that appears in front of you. You have just entered the world of Space Rocks 3-D. It is a dangerous world that gets more difficult as you gain skill. To help you along the way are various power-up items.

It is not hard to find the giver of the power-up gifts. Just leave one eye on the rocks that are careening towards your ship and search the screen for something that is not a rock. If you spot a round metallic object that has four arms each with a ball on the end, then you have found an enemy worse than the rocks. The Magnatron will suck everything but the rocks towards it. If your ship is caught in its way, then your turn is over. But . . . if in your search you spot a satellite dish, then you are in luck. As long as you are quick enough to shoot it from the front, you will reap the benefits of weapon power-ups.

Can you control your ship and shoot the rocks at the same time? Is it possible to avoid the Magnatron? Have you been able to master the art of shooting the satellite before it shoots you? If the answer to all of these questions is yes and you are looking at a rock-free screen, then wait for the gate to appear. It will trap your ship in its invisible beam and transport you to the next level where the fun begins all over again. Good luck!


UFO


Your Ship


Magnatron


Satellite

Space Rocks 3D is a Windows based arcade game which features the following:

Fast moving 256 color graphics using DISPDIB.DLL for direct VGA access. There is also a WinG option for operation within a window.
Realistic tumbling asteroids.
Interesting backdrops.
Some alien nasties to kill
Multiple weapons and power-ups.
Correct momentum calculations for bouncing off objects.
Keyboard, Mouse and Joystick control.
Fun demo mode, watch it.

Space Rocks 3D is produced through Elpin Systems.
The author can be contacted at gsummers@physics.ox.ac.uk
Elpin Systems can be reached at support@elpin.com

Visit Elpin Systems on the Web!
Point your browser to:
http://www.elpin.com
You will find information about Space Rocks 3D as well as other products to try.

Controls

The controls are user definable. The following represents the default settings.

Keyboard

 : Rotate Left

 : Rotate Right

 : Thrust

 : Fire weapon

 : Shield

Mouse

The ship will rotate to face towards the mouse pointer, with these additional controls applying:

 : Fire weapon

 : Thrust

 : Shield

Joystick

Joystick Left	:	Rotate Left
Joystick Right	:	Rotate Right
Joystick Forward	:	Thrust
Button 1	:	Fire Weapon
Button 2	:	Shield

A key on the keyboard can be used if your mouse/joystick does not have enough buttons.

Additional keys

F2	:	Start One Player Game
F3	:	Start Two Player Game
F5	:	Show/Hide the Mouse Pointer
'P'	:	Pause/Unpause
M	:	Show/Hide the Mouse Pointer
Ctrl-'Q'	:	Quit current Game

(The game will pause if you switch to another application, or open a dialog box.)

Space Rocks 3D Internals

The program is written mostly in C++ plus a small amount of assembler. The game kernel took about 2 weeks to write and consists of about 5000 lines of code, however a lot more time and effort has gone into ironing out bugs and getting the code to work with the direct VGA option. I have also written several utility programs to facilitate the automatic generation of many game objects.

The direct VGA mode uses Mode-X, assembly routines draw directly to the display using a page flipping mechanism.

The Windowed mode uses an off-screen WinG bitmap. Assembler code it utilized to draw into the off-screen bitmap, both bottom-up and top-down code has been written. WinGStretchBlt() is used with variable scale factor to copy rectangles which need updating to the screen.

Game objects are handled as C++ classes, more complex objects are derived from the simple base object class. Classes exist for special purposes like target acquisition, a object derived from these additional classes automatically gains its functionality. Multiple copies of these objects can be created without any chance of overwriting data. For an example watch the two ship auto play demo mode.

The asteroids were modeled by taking a number of points distributed about a sphere (typically 4096 for the large rocks), and applying numerous craters and additional roughness to the surface. The 3D objects were then rendered and anti-aliased to create the 2D bitmaps. Other rotating objects were generated and anti-aliased from single bitmaps.

All objects have mass and this is used to calculate the momentum change when certain objects bounce off each other.

How to Play

Press F2 to start a one player game.
Press F3 to start a two player game.

Use the controls to control your ship(s). Shoot the rocks and aliens. When the screen is void of enemies and rocks you go on to the next level. The game is over when you run out of ships (or if the game runs out of asteroids, unlikely!)

When a new level starts the center of the screen is generally the safest place to be.

The ship's status indicator shows score, lives left, shield strength available and weapon overheat indicator. When the shield strength is used up it will become deactivated. While not in use the shield will recharge.

After your ship has been destroyed your next ship will wait until it is safe to materialize. This is quite a loose definition of safe. In general there will be room to appear but a rock might be about to hit you in the face, be ready with your shield! To force the ship to materialize while it is waiting for space, just press the shield button and you will appear with the shield on. What will happen if you appear within an asteroid is not known.

Tactics

- Shoot the aliens for power-ups.
- Experiment with the different weapon power-ups (colored gems) to find out their relative merits. Power up the weapon by collecting gems of the same color. Powered up weapons require higher charge capacity and overheat more quickly, so you will need to also collect charge power-ups (battery icons) and temperature units (thermometer icons). A powered up weapon without these extra units will be difficult to use.
- The power-ups change with time, so if you wait a bit you can get the one you want.
- To avoid the aliens fire, keep you distance and keep moving.
- When you lose a ship some of the power-ups survive, you may be able to pick them up if you're quick.

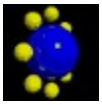
Power Ups

 Increases the ships weapon charging power.

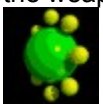
 Increases the ships mass.

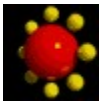
 Increases the ships shield power.

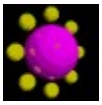
 Increases the ships thrust power.

 Changes your ships weapon to the blue type. This varies by player. You will be upgraded to

the weapon type of this color.

 Changes your ships weapon to the green type. This varies by player. You will be upgraded to the weapon type of this color.

 Changes your ships weapon to the red type. This varies by player. You will be upgraded to the weapon type of this color.

 Changes your ships weapon to the purple type. This varies by player. You will be upgraded to the weapon type of this color.

WinG

WinG is Microsoft's high performance graphics library enabling bandwidth limited memory transfers to the display.

Notes on Performance

Direct VGA Mode

In direct VGA mode the game should run acceptably on a 486-33 and higher. Slower machines or ISA graphic bus machines may run too slowly, if this is the case decrease the number of objects in the preferences dialog.

WinG mode

In WinG mode the speed of the program is likely to be limited by the time taken copying regions of the off screen buffer to display memory. It is essential to have WinG correctly installed on your system and to be running in a 256 color graphics mode. WinG is by nature 256 color, it will run in other color modes but performance will be significantly reduced due to the additional graphics translation necessary.

For local bus graphics systems (32 bit, 25 or 33MHz) the program should run quite smoothly. However, slower ISA graphics cards (16 bit, 8 or 11MHz) could cause the program to run very slowly. For this reason we have allowed the number of objects to be modified (this is a number which effects how many asteroids will be created on each level). The default value is 100%, setting this value to 50%, for example, would approximately double the speed of the game.

For slower machines we suggest you use the lowest resolution 256 color screen mode available (e.g.320x200 or 640x480 lo-res).

For faster machines any 256 color mode should be sufficient.

Troubleshooting

 The direct VGA mode is provided via DISPDIB.DLL which is supplied by Microsoft. Apparently it's functions are not supported on Windows NT, but it should work fine with 3.1,3.11 and 95. However, there may be problems with Windows 95 as the DLL does not seem to fully turn off the GDI, problems may occur with the mouse or when task switching.

 The sound mixing code may cause clicking if the number or size of the buffers is too small, try increasing these values if you have this problem. WaveOutReset is used to mix new sounds, on some systems this can cause unacceptable clicks or delays, if this is the case you can try using the Remix option on the Sound configuration dialog.

 If your joystick is not functioning (or properly) you need to calibrate it. Open the control panel and double click on the joystick icon. The joystick program will walk you through the steps to calibrate and test it.

 For technical support contact Elpin Systems by:

- e-mail at support@elpin.com
- phone at (408) 441-7980
- fax at (408) 441-7982
- mail at:
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