GrokkSoft
Interactive entertainment reinvented

HoverCAD
User's Manual

(version 0.9, no graphics)

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Introduction

HoverCAD is the editor used to design HoverRace tracks. This program is the same that was used by GrokkSoft's engineers to design the original HoverRace tracks.

This manual is more a course than a reference manual. There is very few thing that you must know to build a track but all these thing that you must know are very important.

The Course

Starting HoverCAD

In the Windows **Start** menu select the **Programs** option. From there you should see the **HoverRace** folder. The **HoverCAD** program is in that folder. Just click on the **HoverCAD** icon and the program will be launched.

Loading the example track

Files loaded by the HoverCAD program are of type ".tr". These files are normaly stored in the "...\HoverRace\track_source" directory.

We have included the source file of the "The Alley2" file with the HoverRace package. You will now load this file in HoverCAD. This file will be used in the remaining of the course. It is also a good file to start your own track design.

To load the track use the menu option **File|Open**. Then go to the "track_source" directory. In that directory you should see the file "The Alley2.trk". Select the file and click on open. You should now see the Alley track on o your screen.

If you have already played this track you should recognize its shape. It is also highly recommended that you have try the game before trying to do a track.

Track components

The track is composed of nodes, sections, anchor, 3D features, walls, objects and starting positions.

Sections are the polygons that you see on the canvas. A track is composed of a set of adjacents *sections.* A section is a 3D polygon having a floor level and a ceiling level. Hovers can oly move inside sections and *sections* are always seen from inside(because hovercrafts circulate inside sections)

By default only the edge of sections is drawn but when a section is in the selected state it is represented by a filled gray polygon.

3D Features are used to create solid polygonal shapes inside sections. In the alley there is only one *feature*, it is the rail that bridge over the water. You should be carefull by using *features* because they can not be optimized at drawing time. Features are always seen from outside because the hovercraft can not enter in a feature.

3D Features are represented by yellow polygons in the CAD. When the are selected they become brighter.

Nodes are the red dotes that you see on the screen. *Nodes* are used to create *sections* and *3D features* vertices(vertices(pl. of vertex) are the corners of a polygon). By default *nodes* are of a dark red color but when they are selected they are colored with a brighter red.

Anchors are the blue pie slice that attach *sections* and *3D features* to *nodes*. When selected *anchor* become brighter.

Walls exist, they can be selected but they are not clearly identify in the current version of HoverCAD. There is a *wall* for each side of a *section* or for each side of a *3D feature.* *Walls* only have one visible face when they are rendered. For *sections walls* the visible face is the one that is visible from inside the *section*. For *3D features*, the visible face is the one visible from outside the *feature.*

A *wall* is in the selected state when the *anchors* at its both ends are selected.

When two *sections* share a same side, they do not share the same *walls*. For the shared side, each section have it's own wall.

Starting Positions and *objects* look the same on the editor canvas. They are both represented by green dows that become brighter when selected.

Presently there is only 3 kind of *objects* that you can add to the track. They are "Finish Line", "Fuel Zones" and "Speed zones". All these objects are aria objects. They are not visible on the track but they have an effect when you enter the *section* where they are located.

Interface components

The tools

The tools are the bottons located on the left side of the interface. Tools let you select the way you will manipulate the items on the canvas. Each mode as its corresponding cursor shape.

The *selection tool* let you select items on the canvas. This tool have too operational modes. The first mode is called pointing. To use that mode just point on a node or an anchor and click on the left mouse button. Than will select the pointed item.

The second mode is called "Region Selection". To use that mode simply draw a rectangular area by bragind the mouse while maintaining the left mouse button down. All what is inside the created region become selected.

The "selection tool" let you do multiple with the help of the SHIFT key. Simply keep the Shift key pressed while selecting and the new selection will be added to the previous selection.

The "hammer tool" let you attach, detach and move nodes. In that mode is you clisk on a node and keep the mouse button pressed you can drag that node. If you drag the node on an other node. The two nodes will merge in a single node.

You can also crag anchor in that mode. If you drag an anchor, the anchor will be detached from its original node. You can then drag the anchor the way you want.

The "hand tool" let you drag a selection. Click on the canvas and move the selection to the desired position while maintaining the mouse button pressed.

The "section creation tool" Let you create new sections. Each time you click on the mouse, a new node is created. When you click on the first node of the sequence, the shape is closed and the new section is created.

If you create nodes at a position where a node already exist, the 2 nodes are automatically merged.

The "3D features tool" works ecactly the same way at the "section creation tool" except that it creates 3D features.

"Starting Position and object creator tool" is used to create new starting positions of objects. Simply click at the position where you want to create a new starting position or a new object and a new green dot will be added. The attibutes of this green dots can be changed with the help of the properties editor.

"Node path tool". This helper tool is not availlable yet.

"Cut selection button". By pressing on this button you delete the selection. This is equivalent to the DEL key.

"Split wall button". This button is used to insert a node to an existing section or 3D features. This function works if onely one wall is selected.

"Zoom slider". This slider let you resize the canvas image. It do not affect the track size. It just change the way the track is displayed in HoverCAD.

The properties editors

The "properties editors" are located on the right side of the screen. The first set of attributes let you change the attributes of the selection. The second set of attributes let you modify attibutes that are global to a track.

Depending on what is selected on the canvas, some attibutes may be now availlable. When not availlable, attributes edition box are grayed.

Usually, properties editin box contains the current attiribute value of the selected item. When several items are selected, some properties edition box may remain blank. This mean that not all the selected itams have the same value for the correponding attribute. Even if the properties box is blank you can select a new attibute value for the selection.

All the mesurements displayed in these fields are in meters. A meter is approximatively equal to a yard(39 inchs to be more exact). 1 km is equivalent to 1000m(approx. 0.6 miles).

Field that you will find in the properties editors are:

Wall Texture:

> Let you change the texture of selected walls

Ceiling Texture:

> Let you change the ceiling texture of selected sections or 3D features

Floor Texture:

> Let you change the floor texture of selected sections or 3D features

Ceiling Level:

> Absolute ceiling level (in meters) of selected sections and 3D features

Floor Level:

> Absolute floor level (in meters) of selected sections and 3D features

X:

> Absolute X position (in meters) of selected nodes, Starting positions or objects.

Y:
> Absolute Y position (in meters) of selected nodes, Starting positions or objects.

Z:

    Elevation (in meters) of selected Starting positions or objects. This position is relative to the floor level of the sections where they are located.

Angle:

    Orientation of the selected Starting positions or objects. Walue of this feild must be include in the rance of 0 to 360 degrees.

Item type:

    Use this box to assign a type to a selected green dot.

Background image:

    Let you assign a background image to the track. You can not assign any image to the background of a track. See the "Background image" section for more informations of this image.

Track description:

    Textual description associated to the track.

Compiling a track

Once you have designed your track in the hoverCAD, you must compile the track to be able to use it. Use the **File Compile** menu option(**F7**) to compile a track. You will be asked to provided a name and a directory location for the compiled track. Always save your created tracks in the "HoverRace/Tracks" directory to be able to use them.

When you will press on the SAVE button, a DOS box will appear and you should see the output of compiling process apearing in it. Once compilation will be finish, this box will automatically be closed(solud take less than a minute on most computer)

It is also highly suggested to oftenly compile and try yor track why designing it.

Rules and limitations

- Sections and 3D features must have a convex shape.

 If you do not use convex shapes you may see rendering errors or your HoverCraft may get stuck when hitting a wall or when crossing the boundery between 2 sections.

- Sections must be kept small.

If you use too large sections your HoverCraft may get stuck when hitting a wall or when crossing the boundery between 2 sections.

- 3D features must be totally enclosed within a single section

The background image

The background image must be a PCX image(version 5) having between 17 and 128 colors. The image must have a resolution of 2048x256.