Presentation of the 3-D world on web page by coalescing VRML and HTML: A small illustration

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Abstract: There are various different types of software's are available which depends upon the different requirements and OS version In this paper our aim is to build some interactive 3d view of any object, we can express our vision or goal in terms of 3D model on World Wide Web. The initial requirements to build or to achieve our goal we require some plug-in software's and tools and also we need to Implement VRML file and that VRML file includes coding to generate 3-D objects, this coding should follows syntax of VRML.

Keywords: VIRTUAL, HYPERTEXT, ANCHOR , 3-D, .wrl (extension for VRML)

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Introduction:

Virtual Reality Modeling Language pronounced as vermal and initially, this is also called by a name Virtual Really Markup language. This is a standard language which is used for interactive simulation with in the World Wide Web. It allows to represent 3-dimensional interactive vector graphics and a "virtual worlds" networked via internet and hyper linked with the World Wide Web. VRML is text file format which able to design vertices and edges for 3D polygon with any of the specified color. It is also used to perform UV mapping which create the 3D models of the 2D image. VRML files are commonly called with a name of "worlds" and have .wrl extension. VRML worlds contain the text format so that it easily compressed by using the gzip and compressed file transfer through internet more quickly.

HTML is hypertext markup language using HTML tags we can developed web page, HTML doesn't need any plug-in software it just required web browsers. HTML provides way through we can embed any modeling language like VRML. It may possible by using anchor tag in to the HTML file. It also used to provide user interface for end user.

Definition of VRML:

The Virtual Reality Modelling Language (VRML) is a file format for describing Interactive 3-D objects and worlds. VRML is designed to be used on the Internet, Intranets, and local client systems. VRML is also intended to be a universal interchange Format for integrated 3-D graphics and multimedia. According to Silicon Graphic Inc. (SGI), VRML is pronounced vur'mel.

Description of VRML:-

VRML defines the layout and content of a 3-D world with links to more information. VRML is not a general purpose programming language like C++, a script language like JavaScript or a mark-up language like HTML. It is a modelling language (scene description language) that demonstrates the geometry and

behaviour of a 3-D scene. A VRML file does not have to be compiled from source code, linked into an object module, and then run. Instead, VRML files are parsed, rendered, and finally displayed by a Web browser. A 3-D object created using the VRML format or a group of such objects is generally called a world or a scene. A VRML file is a plain ASCII text file. It can be created, viewed, and edited in any plain text editor.

VRML files usually reside on a Web server. They are transferred to a browser for Viewing via the Hypertext Transfer Protocol (HTTP) on the Web. VRML worlds usually end with the file extension .wrl. When a web user accesses a URL ("Uniform Resource Locator") which contains a VRML world, the ASCII text file containing the VRML codes is downloaded into the user's Web browser. The MIME (Multipurpose Internet Mail Extensions) type for VRML documents is model/vrml. Alternatively, it can be x2world/x-vrml.

One must have a VRML browser or a plug-in to view the VRML worlds on the Web. When and VRML-enabled browser contacts the file extension of .wrl, it displays the world that is described by the file on the screen. On the server side, a VRML world may be distributed across different servers at different locations.

Besides polygons and 3-D items, a VRML node can contain images or sound data. A VRML page can also include links (which are called anchors) to other VRML documents or

HTML documents. A VRML object (or part of an object) can link to any other item on the Internet or in conjunction with many other languages and file formats.
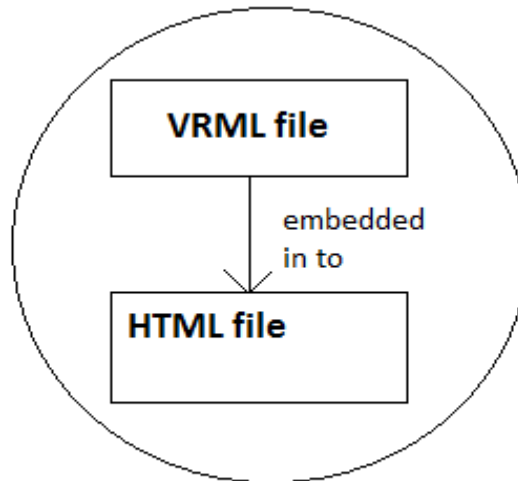
VRML files use a nested-object representation, sending the overall picture information first and the details later. The VRML scenes and objects are first displayed as a rectangle with the detail increasing as more information arrives. Therefore, the user can start navigating (read the text/go through the available links) while the browser is loading the details. When the object is completely loaded, a VRML world viewer can zoom close to the object, turn the object over, or explore the world from any angle he/she wants.

Objective:

- Is to provide 3-D world on web pages by embedding VRML with HTML.

Related work:

Embedding VRML in to HTML: It is depicted in following diagram:

first line is an exception, and is read by a browser. V2.0 indicates the version and UTF8 is an encoding scheme to enable international character display (text string standard). VRML 1.0 had either ASCII or UTF8, but version 2 has only UTF8.

Nodes and Fields: A VRML world is made up of nodes, which are types of objects. The fields inside these nodes are properties of the object. Fields can be anything from a size of a box to another node inside the first. VRML has the following major node types: shape, grouping, appearance, billboard, collision, LOD, light, Inline, Anchor, and PROTO.

fig : VRML embedded in HTML

All visible objects are defined inside a Shape node. This node has two fields: appearance and geometry. The appearance field specifies an Appearance node, which isused to define color, textures and so on to be applied to the geometry. Defining the appearance field is optional. If nothing is specified in this field, the default values will be used. The texture field of the Appearance node can be texture-map objects.

The geometry field indicates which shape is to be drawn. The value for the geometry field may be any of the following nodes: Box , Cone , Cylinder, ElevationGrid, Extrusion, IndexedFaceSet, IndexedLineSet, PointSet, Sphere, and Text. A Material node can contain any of the following six fields: diffuseColor , specularColor , emissiveColor , ambientIntensity, shininess, transparency. Example 1 shows a simple Shape node definition for a glowing semi-transparent green colored box.

Conclusion:

This paper has presented a detailed technical overview of VRML, and how VRML and HTML are relate to each other. Here we clearly mentioned that VRML produce 3-D world. Therefore VRML allows the users to control the interactions between the user and a 3D graphic model. It can be used in applications such as recreating a historical site or constructing chemistry molecules. However a lack of wide spread efficient business use of VRML has slowed its development. At the present stage, more sophisticated authoring tools along with high-

As figure shows that embedding VRML in to HTML it is possible by Importing VRML object in to HTML tags through which VRML can enable on to the web page. By this approach we can easily provide option of make virtual tour to visitors of your site.

Typical small VRML code :

```
Transform {
  translation 0 0 0
  children [

Shape {
        appearance Appearance
{
                    material
Material { }
        }
        geometry Box {
              size  010.0
0.4 1.0
        }
}
]
}
```

In Above example shows typical small VRML code , Any line that starts with a '#' character in a VRML file is a comment, and is ignored by the VRML enabled browser. The

speed computer and high-speed network resources are needed before VRML will become more widely used on the Internet.

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Useful On-line Sources

1. The VRMLworks -- http://home.hiwaay.net/~crispen/vrmlworks/
2. The VRML Consortium -- http://www.vrml.org/
3. The VRML Repository -- http://www.web3d.org/vrml/vrml.htm
4. The Mining Company -- http://vrml.miningco.com/compute/vrml/