Title: RAY TRACING A THREE-DIMENSIONAL SCENE USING A HIERARCHICAL DATA STRUCTURE

Abstract: Ray tracing a three-dimensional scene (100) made up of geometric primitives (116, 118, 120, 122, 124, 126, 128, 130) that are spatially partitioned into a hierarchical data structure (200). One example embodiment is a method for ray tracing a three-dimensional scene (100) made up of geometric primitives (116, 118, 120, 122, 124, 126, 128, 130) that are spatially partitioned into a hierarchical data structure (200). In this example embodiment, the hierarchical data structure (200) includes at least a parent node (202) and a corresponding plurality of child nodes (204–230). The method includes a first act of determining that a first active ray in the packet hits the parent node (202) and a second act of descending to each of the plurality of child nodes (204–230).
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INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US07/73635

A. CLASSIFICATION OF SUBJECT MATTER  
IPC: G06T 17/00 (2006.01)  

USPC: 345/419,420,423,424,440,645  
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED  
Minimum documentation searched (classification system followed by classification symbols)  
U.S.: 345/419,420,423,424,440,645

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
ACM, IEEE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST, WEST, GOOGLE: ray tracing, hierarchical structure, model partition, interval arithmetic, hit and miss traversing.

C. DOCUMENTS CONSIDERED TO BE RELEVANT  

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
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<tbody>
<tr>
<td>P</td>
<td>US 20070206008 (KAUFMAN et al.) 06 June 2007 (06.06.2007), paragraphs 0385-0395.</td>
<td>1-19</td>
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Further documents are listed in the continuation of Box C.  
See patent family annex.

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11 June 2008 (11.06.2008)

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