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(54) Title: NON-STATIC 3D MAP VIEWS

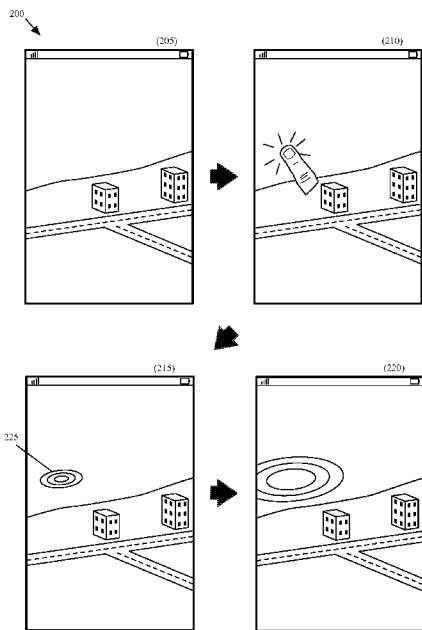


Figure 2

(57) Abstract: Some embodiments provide a mapping application for generating views of a three-dimensional (3D) map. The mapping application includes a geographic data module for identifying 3D map data for a portion of a 3D map. The 3D map data includes (1) camera captured images (CCIs) of a portion of the real world that the portion of the 3D map represents, (2) a first set of map elements in the portion of the 3D map specified to be textured with CCIs, and (3) a second set of map elements in the portion of the 3D map specified to be textured with non-CCIs. The mapping application also includes a rendering engine for rendering a view of the 3D map by generating effects for several map elements in the 3D map in order to make the several map elements seem animated in the view of the 3D map.

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## AMENDED CLAIMS

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1. A non-transitory machine-readable medium storing a mapping application for generating views of a three-dimensional (3D) map, the mapping application comprising:

a geographic data module for identifying 3D map data for a portion of a 3D map, the 3D map data comprising (1) camera captured images (CCIs) of a portion of the real world that the portion of the 3D map represents, (2) a first set of map elements in the portion of the 3D map specified to be textured with CCIs, and (3) a second set of map elements in the portion of the 3D map specified to be textured with non-CCIs; and

a rendering engine for rendering a view of the 3D map by generating effects for a plurality of map elements that comprises map elements from the first set of map elements and map elements from the second set of map elements in order to make the plurality of map elements seem animated in the view of the 3D map, wherein the animation comprises animation of textures of the plurality of map elements without changing positions of the map elements upon which the textures are rendered.

2. The non-transitory machine-readable medium of claim 1, wherein the 3D map data further comprises a set of vector tiles that includes polygon data for the set of map elements in the portion of the 3D map.

3. The non-transitory machine-readable medium of claim 1, wherein the rendering engine renders the view of the 3D map by texture mapping the CCIs to the first set of map elements in the portion of the 3D map.

4. The non-transitory machine-readable medium of claim 1, wherein the rendering engine animates the plurality of map elements in the portion of the 3D map by applying a shader to the plurality of map elements in the portion of the 3D map.

5. The non-transitory machine-readable medium of claim 4, wherein the shader is a texture shader.

6. The non-transitory machine-readable medium of claim 1, wherein the geographic data module identifies the 3D map data by accessing a map service that provides map data.

7. The non-transitory machine-readable medium of claim 1, wherein the second set of map elements represents a set of bodies of water.

8. The non-transitory machine-readable medium of claim 1, wherein the mapping application further comprises an input recognition module for receiving input and identifying the type of received input.

9. The non-transitory machine-readable medium of claim 8, wherein the rendering engine renders the view of the 3D map based on the identified type of received input.

10. The non-transitory machine-readable medium of claim 9, wherein the rendering engine animates the set of map elements in the portion of the 3D map by applying different shaders to the set of map elements in the portion of the 3D map based on different types of received input.

11. The non-transitory machine-readable medium of claim 1, wherein at least one of the first set of map elements specified to be textured with CCIs is positioned between at least two of the second set of map elements specified to be textured with non-CCIs.

12. The non-transitory machine-readable medium of claim 1, wherein at least one of the second set of map elements specified to be textured with non-CCIs is positioned between at least two of the first set of map elements specified to be textured with CCIs.

13. A non-transitory machine-readable medium storing a mapping application for execution on a device by at least one processing unit, the mapping application comprising sets of instructions for:

displaying a first selectable user interface (UI) control that when activated directs the mapping application to render views of a three-dimensional (3D) map;

displaying a second selectable UI control that when activated directs the mapping application to render views of the 3D map comprising a first set of map elements specified with camera-captured images (CCIs) of the real world that the 3D map represents and a second set of map elements specified with non-CCIs; and

when the first and second UI controls are activated, rendering views of the 3D map by (1) texture mapping the CCIs to the first set of map elements in the 3D map and (2) moving vertices of the first set of map elements in the 3D map in order to make the first set of map elements appear animated in the rendered views of the 3D map, wherein at least one of the elements in the second set of map elements is positioned between at least two of the elements in the first set of map elements.

14. The non-transitory machine-readable medium of claim 13, wherein the device includes an input sensor, wherein the mapping application further comprises a set of instructions for receiving input through the input sensor, wherein the set of instructions for rendering views of the 3D map comprises a set of instructions for moving the vertices of the first set of map elements based on the input.

15. The non-transitory machine-readable medium of claim 13, wherein the set of instructions for rendering views of the 3D map by moving the vertices of the first set of map

elements comprises a set of instructions for rendering views of the 3D map by applying a shader to the vertices of the set of map elements.

16. The non-transitory machine-readable medium of claim 13, wherein the input sensor is an audio sensor.

17. The non-transitory machine-readable medium of claim 13, wherein the input sensor is a motion sensor.

18. The non-transitory machine-readable medium of claim 13, wherein the input sensor is a touch sensor.

19. For a mapping application, a method of generating views of a map, the method comprising:

receiving a request to render a three-dimensional (3D) view of the map based on camera captured images (CCIs) of the real world that the 3D view of the map represents;

identifying in a portion of the map from which to render the 3D view a set of meshes that represent a set of map elements in the map; and

rendering the 3D view of the map by texture mapping non-CCIs to the set of meshes and applying a set of shaders to the meshes in order to animate the set of map elements so that the set of map elements appear animated in the 3D view of the map.

20. The method of claim 19, wherein the set of map elements comprises a set of bodies of water.

21. The method of claim 20, wherein the set of shaders animates the set of bodies of water by ignoring surface normals of polygons in the set of meshes that represent the set of bodies of water.

22. The method of claim 19, wherein the set of map elements comprises a set of buildings.

23. The method of claim 22, wherein the set of shaders animates the set of buildings based on surface normals of polygons in the set of meshes that represent the set of buildings.

24. A device comprising:  
a display screen;  
at least one processing unit; and  
a storage storing a mapping program which when executed by the processing unit generates views of a three-dimensional (3D) map, the mapping program comprising sets of instructions for:

identifying 3D map data for a portion of a 3D map, the 3D map data

comprising (1) camera captured images (CCIs) of a portion of the real world that the portion of the 3D map represents, (2) a first set of map elements in the portion of the 3D map specified to be textured with CCIs, and (3) a second set of map elements in the portion of the 3D map specified to be textured with non-CCIs; and

rendering a view of the 3D map by generating effects for a plurality of map elements that comprise map elements from the first set of map elements and map elements from the second set of map elements in order to make the plurality of map elements seem animated in the view of the 3D map, wherein the animation comprises animation of textures of the plurality of map elements without changing positions of the map elements upon which the textures are rendered.

25. The device of claim 24, wherein the 3D map data further comprises a set of vector tiles that includes polygon data for the set of map elements in the portion of the 3D map.

26. The device of claim 25, wherein the set of instructions for rendering the view of the 3D map comprises a set of instructions for texture mapping the CCIs to the first set of map elements in the portion of the 3D map.

27. The device of claim 24, wherein the set of instructions for animating the plurality of map elements in the portion of the 3D map comprises a set of instructions for applying a shader to the set of map elements in the portion of the 3D map.

28. The device of claim 27, wherein the shader is a texture shader.

29. The device of claim 24, wherein the set of instructions for identifying the 3D map data comprises a set of instructions for accessing a map service that provides map data.

30. The device of claim 24, wherein the second set of map elements represents a set of bodies of water.

31. The device of claim 24 further comprising an input sensor, wherein the mapping program further comprises a set of instructions for receiving input from the input sensor and identifying the type of received input.

32. The device of claim 29, wherein the set of instructions for rendering the view of the 3D map comprises a set of instructions for rendering the view of the 3D map based on the identified type of received input.

33. The device of claim 32, wherein the set of instructions for animating the plurality of map elements in the portion of the 3D map comprises a set of instructions for applying different shaders to the plurality of map elements in the portion of the 3D map based on different types of received input.