

CLAIMS:

1. A method for performing rendering at a given viewpoint of at least one portion of visual areas blinded to a perspective rendering at the given viewpoint,
5 the method comprising:
 providing a projection model comprising a first part used for rendering far view and a second part for rendering near view such that at least one portion of the visual areas is rendered using the second part of the projection model and further wherein a transition between the first part of the projection model and the
10 second part of the projection model is characterized by projection vectors substantially similar;
 obtaining image data;
 performing a first projection of at least one part of the image data according to the first part of the projection model to generate first projected data;
15 performing a second projection of another part of the image data according to the second part of the projection model to generate second projected data;
 displaying projected data using the first projected data and the second projected data.
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2. A method for performing rendering at a given viewpoint of at least one portion of visual areas blinded to a perspective rendering at the given viewpoint, the method comprising:
 providing image data;
25 performing a first projection of at least one part of the image data according to a first part of a projection model, the projection model comprising the first part used for rendering far view and a second part for rendering near view such that at least one portion of the visual areas is rendered using the second part of the projection model and further wherein a transition between the first part
30 of the projection model and the second part of the projection model is characterized by projection vectors substantially similar;

performing a second projection of another part of the image data according to the second part of the projection model to generate second projected data;

5 providing projected data comprising the first projected data and the second projected data.

3. The method as claimed in claim 2, wherein the providing of the image data comprises receiving the image data from a device selected from a group consisting of a magnetic resonance imaging (MRI) device, a positron emission
10 tomography (PET) device, an X-rays device, an ultrasound device and any combination thereof.

4. The method as claimed in any ones of claims 2 to 3, wherein the providing of the projected data comprises displaying the projected data on a screen.
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5. The method as claimed in any ones of claims 2 to 3, wherein the providing of the projected data comprises performing at least one of storing the projected data and transmitting the projected data to a remote location.

20 6. The method as claimed in claim 2, wherein the providing of the image data comprises receiving the image data from a DICOM server.

7. The method as claimed in any ones of claims 1 to 6, wherein the first part of the projection model comprises a semisphere portion of a semispherical
25 projection model, further wherein the second part of the projection model comprises a cylindrical projection model.

8. The method as claimed in claim 7, wherein the semispherical projection model is characterized by:

$$30 \quad 0 \leq r \leq R_1 = R_c \quad \overrightarrow{n(r)} \begin{cases} r/R_s \\ \theta \\ \sqrt{R_s^2 - r^2}/R_s \end{cases}$$

9. The method as claimed in any ones of claims 7 to 8, wherein the cylindrical projection model is characterized by:

$$Rc = R1 \leq r \leq R3 = 3 \cdot Rc \quad \overrightarrow{n(r)} \begin{cases} Rc / \sqrt{Rc^2 + (r - R2)^2} \\ \theta \\ (r - R2) / \sqrt{Rc^2 + (r - R2)^2} \end{cases}$$

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10. The method as claimed in any ones of claims 1 to 6, wherein the first part of the projection model comprises a portion of an ellipsoid projection model, further wherein the second part of the projection model comprises a curved cylindrical projection model.

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11. The method as claimed in any ones of claims 1 to 10, wherein each of the first part of the projection model and the second part of the projection model is symmetrical around an axis extending from the given viewpoint to a projected viewpoint.

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12. A computer-readable storage medium storing computer-executable instructions which, when executed, cause a processing device to perform the method as claimed in any ones of claims 1 to 11.

20 13. Use of the method as claimed in any ones of claims 1-11 for performing a fly-through.

14. A system for performing rendering at a given viewpoint of at least one portion of visual areas blinded to a perspective rendering at the given viewpoint,
25 the system comprising:

an image data providing unit for receiving and providing image data;

a first projection performing unit for performing a projection of at least one part of the provided image data according to a first part of a projection model, the projection model comprising the first part used for rendering far view and a second part for rendering near view such that at least one portion of the visual areas is rendered using the second part of the projection model and further wherein a transition between the first part of the projection model and the second part of the projection model is characterized by projection vectors substantially similar, the first projection performing unit further providing a first projected data;

5 a second projection performing unit for performing a projection of another part of the provided image data according to the second part of the projection model and for providing a second projected data;

10 a projected data providing unit for receiving the first projected data and the second projected data, for generating projected data using the first projected data and the second projected data and for providing the projected data to thereby render at least one portion of visual areas blinded to a perspective rendering at the given viewpoint.

15 15. A system for performing rendering at a given viewpoint of at least one portion of visual areas blinded to a perspective rendering at the given viewpoint, the system comprising:

20 a display device;
an image data providing unit;
a central processing unit;
a memory comprising a program, wherein the program is stored in the memory and configured to be executed by the central processing unit, the program comprising:
25 instructions for obtaining image data from the image data providing unit;

30 instructions for performing a first projection of at least one part of the image data according to a first part of a projection model, the projection model comprising the first part used for rendering far view and a second part for rendering near view such that at least one portion of the visual areas is rendered using the second part of the projection model and further wherein a transition

between the first part of the projection model and the second part of the projection model is characterized by projection vectors substantially similar;

instructions for performing a second projection of another part of the image data according to the second part of the projection model to generate
5 second projected data;

instructions for generating projected data using the first projected data and the second projected data;

instructions for providing the generated projected data to the display device.

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16. The system as claimed in claim 15, further comprising an output device, further wherein the program comprises instructions for transmitting the generated projected data to the output device.

CLAIMS:

1. A method for performing rendering at a given viewpoint of at least one portion of visual areas blinded to a perspective rendering at the given viewpoint, the method comprising:

providing a projection model comprising a first part used for rendering far view and a second part for rendering near view such that at least one portion of the visual areas is rendered using the second part of the projection model and further wherein a transition between the first part of the projection model and the second part of the projection model is characterized by similar projection vectors;

obtaining image data;

performing a first projection of at least one part of the image data according to the first part of the projection model to generate first projected data;

performing a second projection of another part of the image data according to the second part of the projection model to generate second projected data;

displaying projected data using the first projected data and the second projected data.

2. A method for performing rendering at a given viewpoint of at least one portion of visual areas blinded to a perspective rendering at the given viewpoint, the method comprising:

providing image data;

performing a first projection of at least one part of the image data according to a first part of a projection model, the projection model comprising the first part used for rendering far view and a second part for rendering near view such that at least one portion of the visual areas is rendered using the second part of the projection model and further wherein a transition between the first part of the projection model and the second part of the projection model is characterized by similar projection vectors;

performing a second projection of another part of the image data according to the second part of the projection model to generate second projected data;

providing projected data comprising the first projected data and the second projected data.

3. The method as claimed in claim 2, wherein the providing of the image data comprises receiving the image data from a device selected from a group consisting of a magnetic resonance imaging (MRI) device, a positron emission tomography (PET) device, an X-rays device, an ultrasound device and any combination thereof.

4. The method as claimed in any ones of claims 2 to 3, wherein the providing of the projected data comprises displaying the projected data on a screen.

5. The method as claimed in any ones of claims 2 to 3, wherein the providing of the projected data comprises performing at least one of storing the projected data and transmitting the projected data to a remote location.

6. The method as claimed in claim 2, wherein the providing of the image data comprises receiving the image data from a server.

7. The method as claimed in any ones of claims 1 to 6, wherein the first part of the projection model comprises a semisphere portion of a semispherical projection model, further wherein the second part of the projection model comprises a cylindrical projection model.

8. The method as claimed in claim 7, wherein the semispherical projection model is characterized by:

$$0 \leq r \leq R_1 = R_c \quad \overrightarrow{n(r)} \begin{cases} r/R_s \\ \theta \\ \sqrt{R_s^2 - r^2}/R_s \end{cases}$$

9. The method as claimed in any ones of claims 7 to 8, wherein the cylindrical projection model is characterized by:

$$Rc = R1 \leq r \leq R3 = 3 \cdot Rc \quad \overrightarrow{n(r)} \left\{ \begin{array}{l} Rc / \sqrt{Rc^2 + (r - R2)^2} \\ \theta \\ (r - R2) / \sqrt{Rc^2 + (r - R2)^2} \end{array} \right.$$

10. The method as claimed in any ones of claims 1 to 6, wherein the first part of the projection model comprises a portion of an ellipsoid projection model, further wherein the second part of the projection model comprises a curved cylindrical projection model.

11. The method as claimed in any ones of claims 1 to 10, wherein each of the first part of the projection model and the second part of the projection model is symmetrical around an axis extending from the given viewpoint to a projected viewpoint.

12. A computer-readable storage medium storing computer-executable instructions which, when executed, cause a processing device to perform the method as claimed in any ones of claims 1 to 11.

13. Use of the method as claimed in any ones of claims 1-11 for performing a fly-through.

14. A system for performing rendering at a given viewpoint of at least one portion of visual areas blinded to a perspective rendering at the given viewpoint, the system comprising:

an image data providing unit for receiving and providing image data;

a first projection performing unit for performing a projection of at least one part of the provided image data according to a first part of a projection model, the projection model comprising the first part used for rendering far view and a second part for rendering near view such that at least one portion of the visual areas is rendered using the second part of the projection model and further wherein a transition between the first part of the projection model and the second

part of the projection model is characterized by similar projection vectors, the first projection performing unit further providing a first projected data;

the second projection performing unit for performing a projection of another part of the provided image data according to the second part of the projection model and for providing a second projected data;

a projected data providing unit for receiving the first projected data and the second projected data, for generating projected data using the first projected data and the second projected data and for providing the projected data to thereby render at least one portion of visual areas blinded to a perspective rendering at the given viewpoint.

15. A system for performing rendering at a given viewpoint of at least one portion of visual areas blinded to a perspective rendering at the given viewpoint, the system comprising:

a display device;

an image data providing unit;

a central processing unit;

a memory comprising a program, wherein the program is stored in the memory and configured to be executed by the central processing unit, the program comprising:

instructions for obtaining image data from the image data providing unit;

instructions for performing a first projection of at least one part of the image data according to a first part of a projection model, the projection model comprising the first part used for rendering far view and a second part for rendering near view such that at least one portion of the visual areas is rendered using the second part of the projection model and further wherein a transition between the first part of the projection model and the second part of the projection model is characterized by similar projection vectors;

instructions for performing a second projection of another part of the image data according to the second part of the projection model to generate second projected data;

instructions for generating projected data using the first projected data and the second projected data;

instructions for providing the generated projected data to the display device.

16. The system as claimed in claim 15, further comprising an output device, further wherein the program comprises instructions for transmitting the generated projected data to the output device.