

Claims

1. A method of providing a quantitative volumetric assessment of organ health, the method comprising:

obtaining a volumetric map of organ health comprising information defining a state of tissue health across at least part of an organ, and aligning the volumetric map of organ health to a functional model;

receiving an input from a user defining at least one organ section, said section relating to a part of a functional section defined by a functional organ model;

determining an assessment organ volume, based at least partly on the at least one defined functional organ model;

calculating an organ-viability measure for the assessment organ volume, based at least partly on information within the volumetric map defining the state of tissue health across the organ volume; and

outputting an indication of the organ-viability measure.

2. The method of Claim 1, wherein the method further comprises displaying a graphical representation of the functional organ model to the user, and receiving the input from the user defining the at least one organ section in relation to the displayed graphical representation of the function organ model.

3. The method of Claim 1 or Claim 2, wherein the functional organ model is based on the Couinaud classification of organ anatomy.

4. The method of any one of the preceding Claims, wherein the volumetric map of organ health comprises information defining a state of tissue health for each of a plurality of locations throughout the at least part of the organ, said information

comprising at least one of:

- an indication of pathologies present within the respective location of the organ;
- and

- a health score representative of pathologies present within the respective location of the organ.

5. The method of any one of the preceding Claims, wherein the step of calculating the organ-viability measure for the assessment organ volume comprises:

- calculating an average location health score for all locations within the assessment volume based on information within the volumetric map defining the state of tissue health across the organ volume; and

- calculating the organ-viability measure for the assessment organ volume based on the average location health score and the assessment organ volume size.

6. The method of Claim 5, wherein the average location health score for all locations within the assessment volume comprises:

- identifying pathologies present within each location based on information within the volumetric map defining the state of tissue health across the organ volume;

- for each location summing weighting values for pathologies identified within that location; and

- calculating the average location health score based on the summed weighting values for all locations within the assessment volume.

7. The method of any one of the preceding Claims, wherein the assessment organ volume comprises one of:

- the at least one defined organ section; and

- the remaining organ volume excluding the at least one defined organ section.

8. The method of any one of the preceding Claims, wherein the method comprises generating the volumetric map of organ health based on received data indicating the presence of pathologies within locations of at least a part of the organ.

9. The method of Claim 8, wherein the method further comprises performing interpolation of the received data indicating the presence of pathologies within locations of the organ to derive indications of the presence of pathologies within locations throughout the whole organ, and generating the volumetric map of organ health based on the derived indications of the presence of pathologies within locations throughout the whole organ.

10. The method of Claim 8 or Claim 9, wherein the step of generating the volumetric map of organ health comprises:

- identifying pathologies present within individual locations of the organ;
- for each of said locations summing weighting values for pathologies identified within that location to derive a location health score; and
- generating the volumetric map of organ health comprising the derived location health scores.

11. The method of any one of the preceding Claims, wherein outputting the indication of the organ-viability measure comprises one or more of:

- displaying the organ-viability measure to a user;
- storing the organ-viability measure in at least one data storage device; and
- transmitting the organ-viability measure to at least one external device.

12. The method of any one of the preceding Claims, wherein the at least one organ section is one of a set of pre-defined functional sections of the organ, based on a segmental anatomy of the organ.

13. The method of Claim 12, wherein the set of pre-defined organ sections are sections of the Couinaud classification system.

14. The method of Claim 12, wherein a selection of at least one pre-defined organ section is an interactive process, whereby the user is able to select and/or unselect different segments and combinations of segments.

15. The method of Claim 12, wherein a received input defines one or more sections, at least one of the sections being only part of a function section, thereby excluding at least another part of the function section.

16. The method of any one of the preceding Claims, wherein the input volumetric map of organ health is a corrected MRI-derived T1 map of the liver.

17. A method of providing a quantitative volumetric map of an organ, the method comprising:

obtaining a volumetric map of an organ, the volumetric map comprising information defining a state of tissue health across at least part of an organ;

receiving an input from a user defining at least one organ section said section relating to a part of a functional section defined by a functional organ model;

determining an assessment organ volume, based at least partly on the at least one defined organ section;

calculating a measure of the state of the assessment organ volume, based at least partly on information within the input volumetric map defining the state of the tissue health across the organ volume; and

outputting an indication of the measure of the state of the assessment organ volume.

18. An apparatus for providing a quantitative volumetric assessment of organ health or a quantitative volumetric map of an organ, the apparatus comprising at least one processing component arranged to perform the method of any one of the preceding Claims.

19. The Apparatus of Claim 18, wherein the at least one processing component comprises one or more of:

- one or more programmable components arranged to execute computer program code for performing one or more of the steps of the method of any one of Claims 1 to 17; and

- hardware circuitry arranged to perform one or more of the steps of the method of any one of Claims 1 to 17.

20. The apparatus of Claim 18 or Claim 19, wherein the apparatus further comprises at least one output component for outputting the indication of an organ-viability measure or the state of the assessment organ volume, the at least one output component comprising one or more of:

- a display device for displaying the organ-viability measure or the state of the assessment organ volume to a user;

- a data storage device for storing the organ-viability measure or the state of the assessment organ volume; and

- an interface component for transmitting the organ-viability measure or the state of the assessment organ volume to at least one external device.