CLAIMS

1. A method for intelligent data compression in a portable computing device (“PCD”), the method comprising:

determining a fixation point within an image frame, the fixation point corresponding to a portion of an image frame perceived by a fovea of a human eye;

sectoring the image frame into two or more sectors, wherein the two or more sectors comprises a fixation sector that includes the fixation point and one or more foveated sectors, each foveated sector does not include the fixation point, and each sector comprises a plurality of tiles;

compressing the image frame such that the fixation sector is compressed according to a compression algorithm having a low compression factor and the one or more foveated sectors are compressed according to a compression algorithm having a high compression factor, wherein each respective tile within a particular foveated sector is subject to a different compression factor that is based on a distance between the fixation sector and the respective tile, each compression factor of a respective tile within a foveated sector having a magnitude that is assigned corresponding to the distance between the fixation sector and a respective tile; and

storing the compressed image frame.

2. The method of claim 1, wherein the compression algorithm having a low compression factor is a lossless compression algorithm.

3. The method of claim 1, wherein the compression algorithm having a high compression factor is a lossy compression algorithm.

4. The method of claim 1, further comprising:

determining a blind spot within an image frame;

determining a blind foveated sector, wherein the blind foveated sector is one of the one or more foveated sectors that includes the blind spot; and

compressing the blind foveated sector according to a lossy compression algorithm having a highest compression factor.

5. The method of claim 1, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a square-grid foveated-compression pattern.

6. The method of claim 1, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a cross-grid foveated-compression pattern.

7. The method of claim 1, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a honeycomb foveated-compression pattern.

8. A system for intelligent data compression in a portable computing device ("PCD"), the system comprising:

an intelligent compression module, a monitor module, and an image CODEC module collectively configured to:

determine a fixation point within an image frame, the fixation point corresponding to a portion of an image frame perceived by a fovea of a human eye;

sector the image frame into two or more sectors, wherein the two or more sectors comprises a fixation sector that includes the fixation point and one or more foveated sectors, each foveated sector does not include the fixation point, and each sector comprises a plurality of tiles;

compress the image frame such that the fixation sector is compressed according to a compression algorithm having a low compression factor and the one or more foveated sectors are compressed according to a compression algorithm having a high compression factor, wherein each respective tile within a particular foveated sector is subject to a different compression factor that is based on a distance between the fixation sector and the respective tile, each compression factor of a respective tile within a foveated sector having a magnitude that is assigned corresponding to the distance between the fixation sector and the respective tile; and

store the compressed image frame.

9. The system of claim 8, wherein the compression algorithm having a low compression factor is a lossless compression algorithm.

10. The system of claim 8, wherein the compression algorithm having a high compression factor is a lossy compression algorithm.

11. The system of claim 8, wherein the intelligent compression module, monitor module, and image CODEC module are further collectively configured to:

determine a blind spot within an image frame;

determine a blind foveated sector, wherein the blind foveated sector is one of the one or more foveated sectors that includes the blind spot; and

compress the blind foveated sector according to a lossy compression algorithm having a highest compression factor.

12. The system of claim 8, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a square-grid foveated-compression pattern.

13. The system of claim 8, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a cross-grid foveated-compression pattern.

14. The system of claim 8, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a honeycomb foveated-compression pattern.

15. A system for intelligent data compression in a portable computing device (“PCD”), the system comprising:

means for determining a fixation point within an image frame, the fixation point corresponding to a portion of an image frame perceived by a fovea of a human eye;

means for sectoring the image frame into two or more sectors, wherein the two or more sectors comprises a fixation sector that includes the fixation point and one or more foveated sectors, each foveated sector does not include the fixation point, and each sector comprises a plurality of tiles;

means for compressing the image frame such that the fixation sector is compressed according to a compression algorithm having a low compression factor and the one or more

foveated sectors are compressed according to a compression algorithm having a high compression factor, wherein each respective tile within a particular foveated sector is subject to a different compression factor that is based on a distance between the fixation sector and the respective tile, each compression factor of a respective tile within a foveated sector having a magnitude that is assigned corresponding to the distance between the fixation sector and the respective tile; and

means for storing the compressed image frame.

16. The system of claim 15, wherein the compression algorithm having a low compression factor is a lossless compression algorithm.

17. The system of claim 15, wherein the compression algorithm having a high compression factor is a lossy compression algorithm.

18. The system of claim 15, further comprising:

means for determining a blind spot within an image frame;

means for determining a blind foveated sector, wherein the blind foveated sector is one of the one or more foveated sectors that includes the blind spot; and

means for compressing the blind foveated sector according to a lossy compression algorithm having a highest compression factor.

19. The system of claim 15, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a square-grid foveated-compression pattern.

20. The system of claim 15, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a cross-grid foveated-compression pattern.

21. The system of claim 15, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a honeycomb foveated-compression pattern.

22. A computer program product comprising a non-transitory computer usable medium having a computer readable program code embodied therein, said computer readable program code

adapted to be executed to implement a method for intelligent data compression in a portable computing device (“PCD”), said method comprising:

determining a fixation point within an image frame, the fixation point corresponding to a portion of an image frame perceived by a fovea of a human eye;

sectoring the image frame into two or more sectors, wherein the two or more sectors comprises a fixation sector that includes the fixation point and one or more foveated sectors, each foveated sector does not include the fixation point, and each sector comprises a plurality of tiles;

compressing the image frame such that the fixation sector is compressed according to a compression algorithm having a low compression factor and the one or more foveated sectors are compressed according to a compression algorithm having a high compression factor, wherein each respective tile within a particular foveated sector is subject to a different compression factor that is based on a distance between the fixation sector and the respective tile, each compression factor of a respective tile within a foveated sector having a magnitude that is assigned corresponding to the distance between the fixation sector and the respective tile; and

storing the compressed image frame.

23. The computer program product of claim 22, wherein the compression algorithm having a low compression factor is a lossless compression algorithm.

24. The computer program product of claim 22, wherein the compression algorithm having a high compression factor is a lossy compression algorithm.

25. The computer program product of claim 22, wherein the method further comprises:

determining a blind spot within an image frame;

determining a blind foveated sector, wherein the blind foveated sector is one of the one or more foveated sectors that includes the blind spot; and

compressing the blind foveated sector according to a lossy compression algorithm having a highest compression factor.

26. The computer program product of claim 22, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a square-grid foveated-compression pattern.

27. The computer program product of claim 22, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a cross-grid foveated-compression pattern.

28. The computer program product of claim 22, wherein sectoring the image frame into two or more sectors comprises arranging the sectors in a honeycomb foveated-compression pattern.