Clean Version

Amended Set of Claims 1 to 33 (now Claims 1 to 30)

1. A method of coding transform coefficients associated with residual video data in a video coding process, the method comprising:

coding information indicating the significant transform coefficients in a block of transform coefficients with a scan proceeding in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients; and

forming a significance map for the block based on the coded information indicating the significant transform coefficients.

2. The method of claim 1, further comprising:

coding information indicating levels of the significant transform coefficients.

3. The method of claim 2, wherein coding information indicating levels of the significant transform coefficients proceeds in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients.

4. The method of claim 1, further comprising:

determining contexts for context adaptive binary arithmetic coding (CABAC) of the information indicating a current one of the significant coefficients based on previously coded significant coefficients in the inverse scan direction.

5. The method of claim 4, wherein, if a previously coded significant coefficient is located outside of a transform block, a coded level information for the previously coded significant coefficient is assumed to be zero.

6. The method of claim 4, wherein the scan has a diagonal pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

7. The method of claim 4, wherein the scan has a horizontal pattern and the previously coded significant coefficients reside at positions below a scan line on which a current one of the significant coefficients resides.

8. The method of claim 4, wherein the scan has a vertical pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

9. A system for coding transform coefficients associated with residual video data in a video coding process, the system comprising:

a video coding processor configured to code information indicating the significant transform coefficients in a block of transform coefficients with a scan proceeding in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients, wherein the video coding processor is further configured to form a significance map for the block based on the coded information indicating the significant transform coefficients.

10. The system of claim 9, wherein the video coding processor is further configured to code information indicating levels of the significant transform coefficients.

11. The system of claim 10, wherein the video coding processor is further configured to code information indicating levels of the significant transform coefficients proceeds in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients.

12. The system of claim 9, wherein the video coding processor is further configured to determine contexts for context adaptive binary arithmetic coding (CABAC) of the information indicating a current one of the significant coefficients based on previously coded significant coefficients in the inverse scan direction.

13. The apparatus of claim 12, wherein, if a previously coded significant coefficient is located outside of a transform block, a coded level information for the previously coded significant coefficient is assumed to be zero.

14. The system of claim 12, wherein the scan has a diagonal pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

15. The system of claim 12, wherein the scan has a horizontal pattern and the previously coded significant coefficients reside at positions below a scan line on which a current one of the significant coefficients resides.

16. The system of claim 12, wherein the scan has a vertical pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

17. A system for coding transform coefficients associated with residual video data in a video coding process, the system comprising:

means for coding information indicating the significant transform coefficients in a block of transform coefficients with a scan proceeding in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients; and

means for forming a significance map for the block based on the coded information indicating the significant transform coefficients.

18. The system of claim 17, further comprising:

means for coding information indicating levels of the significant transform coefficients.

19. The system of claim 17, wherein the means for coding information indicating levels of the significant transform coefficients proceeds in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients.

20. The system of claim 18, further comprising:

means for determining contexts for context adaptive binary arithmetic coding (CABAC) of the information indicating a current one of the significant coefficients based on previously coded significant coefficients in the inverse scan direction.

21. The system of claim 20, wherein the scan has a diagonal pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

22. The system of claim 20, wherein the scan has a horizontal pattern and the previously coded significant coefficients reside at positions below a scan line on which a current one of the significant coefficients resides.

23. The system of claim 20, wherein the scan has a vertical pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

24. A computer program product comprising a computer-readable storage medium having stored thereon instructions that, when executed, cause a processor of a device for coding transform coefficients associated with residual video data in a video coding process to:

code information indicating the significant transform coefficients in a block of transform coefficients with a scan proceeding in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients; and

form a significance map for the block based on the coded information indicating the significant transform coefficients.

25. The computer program product of claim 24, further causing a processor to:

code information indicating levels of the significant transform coefficients.

26. The computer program product of claim 25, further causing a processor to:

code information indicating levels of the significant transform coefficients proceeds in an inverse scan direction from higher frequency coefficients in the block of

transform coefficients to lower frequency coefficients in the block of transform coefficients.

27. The computer program product of claim 24, further causing a processor to:

determine contexts for context adaptive binary arithmetic coding (CABAC) of the information indicating a current one of the significant coefficients based on previously coded significant coefficients in the inverse scan direction.

28. The computer program product of claim 27, wherein the scan has a diagonal pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

29. The computer program product of claim 27, wherein the scan has a horizontal pattern and the previously coded significant coefficients reside at positions below a scan line on which a current one of the significant coefficients resides.

30. The computer program product of claim 27, wherein the scan has a vertical pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

CLAIMS

1. A method of coding transform coefficients associated with residual video data in a video coding process, the method comprising:

coding information indicating the significant transform coefficients in a block of transform coefficients with a scan proceeding in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients;

forming a significance map for the block based on the coded information indicating the significant transform coefficients;

coding information indicating levels of the significant transform coefficients, wherein coding information indicating levels of the significant transform coefficients proceeds in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients; and

determining contexts for context adaptive binary arithmetic coding (CABAC) of the information indicating a current one of the significant coefficients based on previously coded significant coefficients in the inverse scan direction.

2. The method of claim 1, wherein, if a previously coded significant coefficient is located outside of a transform block, a coded level information for the previously coded significant coefficient is assumed to be zero.

3. The method of claim 1, wherein the scan has a diagonal pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

4. The method of claim 1, wherein the scan has a horizontal pattern and the previously coded significant coefficients reside at positions below a scan line on which a current one of the significant coefficients resides.

5. The method of claim 1, wherein the scan has a vertical pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

6. A system for coding transform coefficients associated with residual video data in a video coding process, the system comprising:

a video coding processor configured to code information indicating the significant transform coefficients in the block of transform coefficients with a scan proceeding in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients, wherein the video coding processor is further configured to form a significance map for the block based on the coded information indicating the significant transform coefficients and to code information indicating levels of the significant transform coefficients, and wherein the video coding processor is further configured to code information indicating levels of the significant transform coefficients proceeds in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients, and wherein the video coding processor is further configured to determine contexts for context adaptive binary arithmetic coding (CABAC) of the information indicating a current one of the significant coefficients based on previously coded significant coefficients in the inverse scan direction.

7. The apparatus of claim 6, wherein, if a previously coded significant coefficient is located outside of a transform block, a coded level information for the previously coded significant coefficient is assumed to be zero.

8. The system of claim 6, wherein the scan has a diagonal pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

9. The system of claim 6, wherein the scan has a horizontal pattern and the previously coded significant coefficients reside at positions below a scan line on which a current one of the significant coefficients resides.

10. The system of claim 6, wherein the scan has a vertical pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

11. A system for coding transform coefficients associated with residual video data in a video coding process, the system comprising:

means for coding information indicating the significant transform coefficients in a block of transform coefficients with a scan proceeding in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients;

means for forming a significance map for the block based on the coded information indicating the significant transform coefficients;

means for coding information indicating levels of the significant transform coefficients, wherein the means for coding information indicating levels of the significant transform coefficients proceeds in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients; and

means for determining contexts for context adaptive binary arithmetic coding (CABAC) of the information indicating a current one of the significant coefficients based on previously coded significant coefficients in the inverse scan direction.

12. The system of claim 11, wherein the scan has a diagonal pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

13. The system of claim 11, wherein the scan has a horizontal pattern and the previously coded significant coefficients reside at positions below a scan line on which a current one of the significant coefficients resides.

14. The system of claim 11, wherein the scan has a vertical pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

15. A computer-readable storage medium having stored thereon instructions that, when executed, cause a processor of a device for coding transform coefficients associated with residual video data in a video coding process to:

code information indicating the significant transform coefficients in a block of transform coefficients with a scan proceeding in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients;

form a significance map for the block based on the coded information indicating the significant transform coefficients;

code information indicating levels of the significant transform coefficients proceeding in an inverse scan direction from higher frequency coefficients in the block of transform coefficients to lower frequency coefficients in the block of transform coefficients; and

determine contexts for context adaptive binary arithmetic coding (CABAC) of the information indicating a current one of the significant coefficients based on previously coded significant coefficients in the inverse scan direction.

16. The computer-readable storage medium of claim 15, wherein the scan has a diagonal pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.

17. The computer-readable storage medium of claim 15, wherein the scan has a horizontal pattern and the previously coded significant coefficients reside at positions below a scan line on which a current one of the significant coefficients resides.

18. The computer-readable storage medium of claim 15, wherein the scan has a vertical pattern and the previously coded significant coefficients reside at positions to the right of a scan line on which a current one of the significant coefficients resides.