

CLAIMS

1. Device (500) for intra-predicting a prediction block (400) of a video image, the device (500) being configured to
 - 5 select a directional intra-prediction mode (501a) from a set of directional intra-prediction modes (501), wherein each directional intra-prediction mode (501) corresponds to a different intra-prediction angle,
 select a filter (402a) from a set of filters (402) based on the selected directional intra-prediction mode (501a),
 - 10 determine, for a given prediction sample (401) of the prediction block (400), a reference sample (403a) from a set of reference samples (403) based on the selected directional intra-prediction mode (501a), and
 apply the selected filter (402a) to the determined reference sample (403a).
- 15 2. Device (500) according to claim 1, configured to
 determine a filter length based on the selected directional intra-prediction mode (401a),
 and
 select as the filter (402a) one having at least the determined filter length.
- 20 3. Device (500) according to claim 2, wherein
 the set of filters (402) includes filters (402) with different filter lengths, particularly with filter lengths that span 1, 3 or 5 adjacent reference samples (403).
- 25 4. Device (500) according to one of the claims 1 to 3, wherein
 each filter (402) in the set of filters (402) performs a different smoothing over the determined reference sample (403a) and one or more adjacent reference samples (403), when applied to the determined reference sample (403a).
- 30 5. Device (500) according to one of the claims 1 to 4, configured to,
 determine the intra-prediction angle corresponding to the selected directional intra-prediction mode (501a), and
 select the filter (402) in dependence of the determined intra-prediction angle.
6. Device (500) according to one of the claims 1 to 5, configured to,

determine the intra-prediction angle corresponding to the selected directional intra-prediction mode (501),

specify, for a further prediction sample (401) of the prediction block (400), a further reference sample (403b) from the set of reference samples (403) based on the selected
5 directional intra-prediction mode (501a),

determine a distance between the determined reference sample (403a) and the further reference sample (403b), and

select the filter (402a) in dependence of the determined distance.

10 7. Device (500) according to one of the claims 1 to 6, configured to
select the same filter (402a) for each directional intra-prediction mode (501a) selected
from a first subset of the directional intra-prediction modes (501), and
select a different filter (402a) for each directional intra-prediction mode (501a) selected
from a second subset of the directional intra-prediction modes (501).

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8. Device (500) according to one of the claims 1 to 7, further configured to
intra-predict the given prediction sample (401) directly from the determined reference
sample (403a),

wherein the device (400) is configured to apply the selected filter (402a) to the
20 determined reference sample (403a) before or during the intra-prediction of the given prediction
sample (401).

9. Device (500) according to one of the claims 1 to 7, further configured to
generate a transposed reference sample (700a) by interpolating the determined reference
25 sample (403a) based on the selected intra-prediction mode (501a), and

intra-predict the given prediction sample (401) from the transposed reference sample
(700a),

wherein the device (500) is configured to apply the selected filter (402a) to the
determined reference sample (403a) before or during the generation of the transposed reference
30 sample (700a).

10. Device (500) according to claim 9, configured to

transpose each reference sample (403) in the set of reference samples (403), wherein a row of reference samples (403) becomes a column of transposed reference samples (700), and a column of reference samples (403) becomes a row of transposed reference samples (700).

- 5 11. Device (500) according to one of the claims 1 to 10, wherein
the reference samples (403) of the set of reference samples (403) are arranged in a row
of the video image adjacently above and above-right the prediction block (400), and/or are
arranged in a column of the video image adjacently left and left-under the prediction block
(400).
- 10 12. Device (500) according to one of the claims 1 to 11, wherein
the device (500) is configured for encoding and/or decoding the video image, or
the device (500) is a video encoder (100) and/or video decoder (200).
- 15 13. Method (800) for intra-predicting a prediction block (400) of a video image, the method
(800) comprising:
selecting (801) a directional intra-prediction mode (501a) from a set of directional intra-
prediction modes (501), wherein each directional intra-prediction mode (501) corresponds to a
different intra-prediction angle,
20 selecting (802) a filter (402a) from a set of filters (402) based on the selected directional
intra-prediction mode (501a),
determining (803), for a given prediction sample (401) of the prediction block (400), a
reference sample (403a) from a set of reference samples (403) based on the selected directional
intra-prediction mode (501), and
25 applying (804) the selected filter (402a) to the determined reference sample (403a).