

Encoding and decoding significant coefficient flags for small Transform Units using partition sets

Gergely Korodi Jinwen Zan Dake He

Research In Motion Limited

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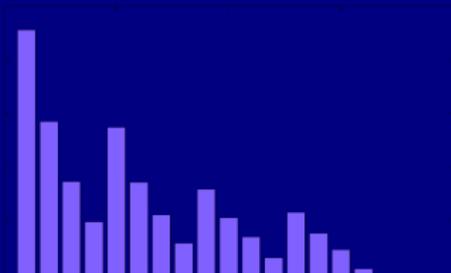


Context Reduction

We propose sharing contexts among different significant coeff flags to reduce complexity and increase adaptivity. We merge contexts when

- Several different contexts behave similarly
- One context does not contribute significantly to encoded output

Context contribution to output for 8×8 luma



HM-4.0



Proposal



Context Reduction

As a result of context sharing

- 15+15 4×4 contexts were reduced to 9+6
- 16+16 8×8 contexts were reduced to 12+4



HM-4.0 luma & chroma



Proposed luma



Proposed chroma

Context Selection

Example for describing the 4×4 assignment

```
if (x < 2) {  
    if (y < 2) return 2 * y + x;  
    else return y + 4;  
} else {  
    if (y < 2) return x + 2;  
    else return 8;  
}
```

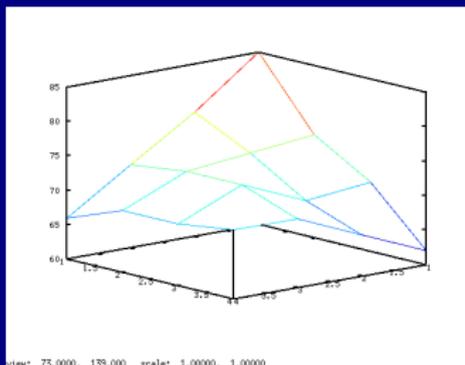


Context Initialization

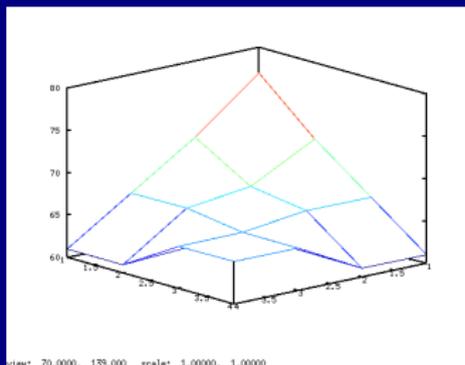
Reduced number of independent parameters ensure generic nature of values

- HM-4.0: 134
- Proposal: 23

4×4 luma



HM-4.0 for QP=27



Proposal for all QP

Results

| | All Intra HE | | | Random Access HE | | |
|---------|--------------|--------|--------|------------------|--------|--------|
| | Y | U | V | Y | U | V |
| Class A | 0.01% | -0.02% | 0.00% | 0.05% | -0.04% | -0.09% |
| Class B | 0.03% | -0.03% | -0.02% | 0.02% | -0.08% | -0.15% |
| Class C | 0.00% | 0.00% | -0.01% | 0.03% | -0.23% | -0.05% |
| Class D | 0.03% | -0.15% | -0.03% | 0.08% | -0.33% | -0.11% |
| Class E | 0.02% | -0.02% | -0.13% | | | |
| Class F | -0.03% | 0.05% | -0.00% | -0.01% | 0.07% | -0.01% |
| Overall | 0.01% | -0.03% | -0.03% | 0.03% | -0.12% | -0.09% |

| | Low Delay B HE | | | Low Delay P HE | | |
|---------|----------------|--------|--------|----------------|--------|--------|
| | Y | U | V | Y | U | V |
| Class B | 0.04% | -0.49% | -0.49% | 0.03% | -0.38% | -0.19% |
| Class C | 0.02% | -0.57% | -0.23% | 0.04% | -0.32% | -0.15% |
| Class D | 0.08% | -0.62% | -0.57% | 0.09% | -1.23% | -0.86% |
| Class E | -0.02% | 0.02% | 0.16% | 0.03% | -0.26% | -0.51% |
| Class F | -0.22% | -0.38% | -0.06% | -0.14% | -0.25% | 0.19% |
| Overall | -0.02% | -0.43% | -0.27% | 0.01% | -0.50% | -0.29% |

