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# Simplification of spatial motion vector scaling process

**JCTVC-I0298**

**Shigeru Fukushima**
JVC KENWOOD Corporation

Il-Koo Kim
Samsung Electronics Co., Ltd.

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# 1. Overview

# Overview

- Proposed technique
  - Simplification of spatial motion vector scaling process
- Algorithm
  - Remove of AMVP scaling candidate derivation for left group
- Crosscheck
  - JCTVC-I0092 by LG
- Related proposal
  - JCTVC-I0084 by Hisilicon
- Simulation results
  - Average 0.0% coding gain/loss

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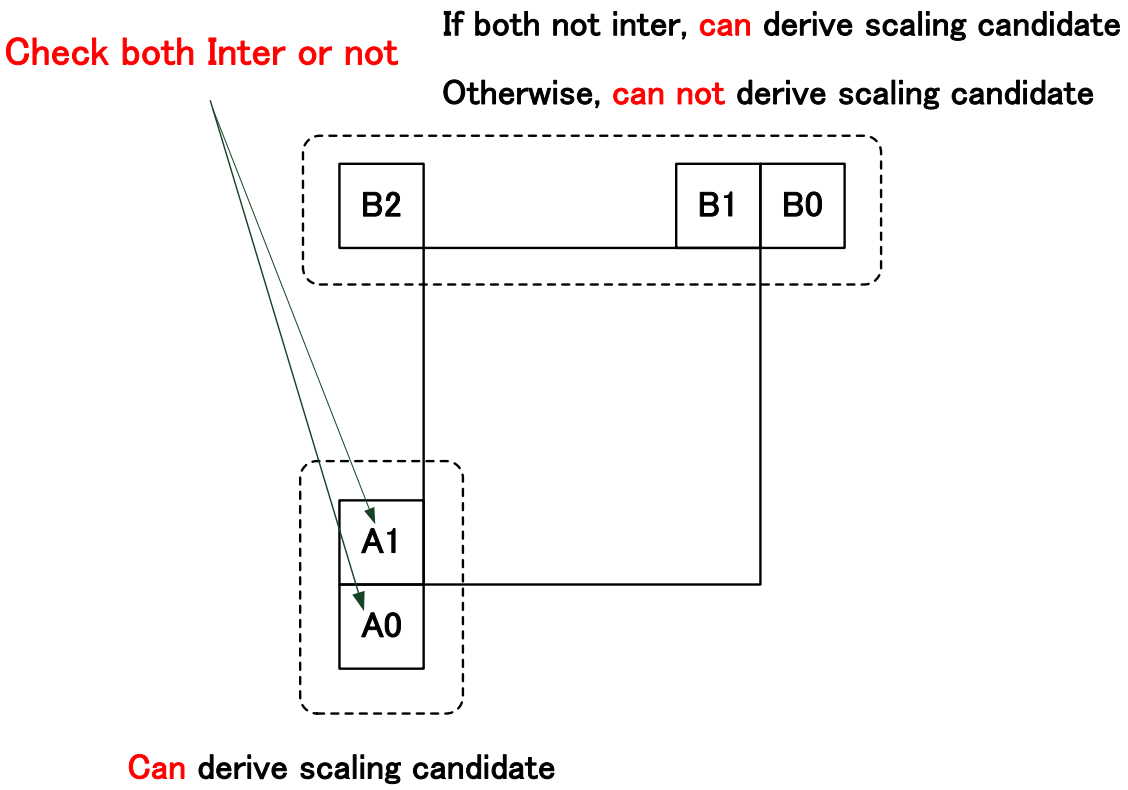
# 2. Algorithm

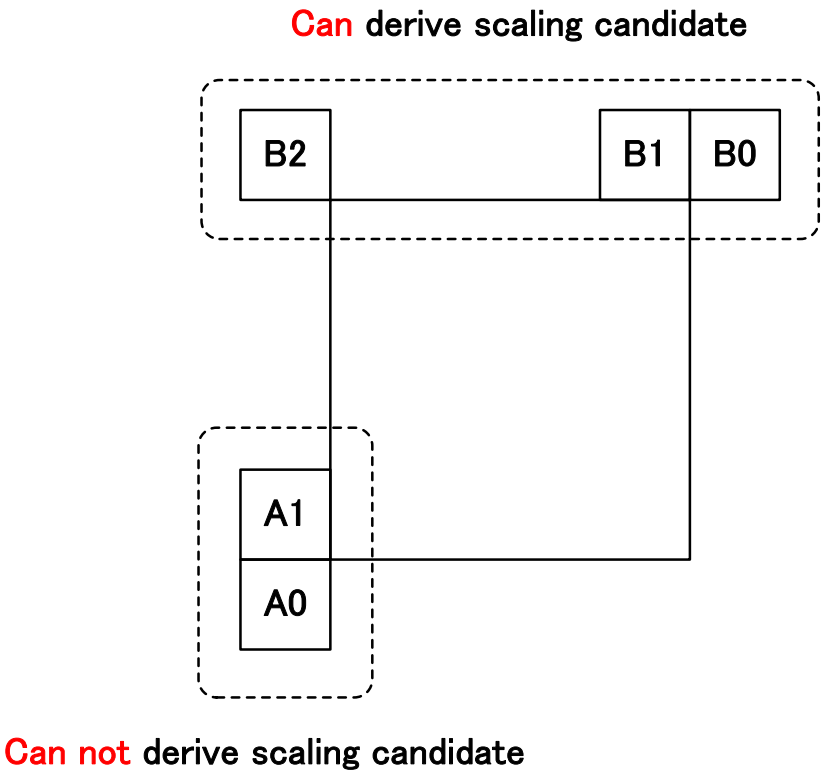
# HM6.0 algorithm

- Two condition checks required on AMVP scaling process
- Need to do scaling calculation after selection of the group



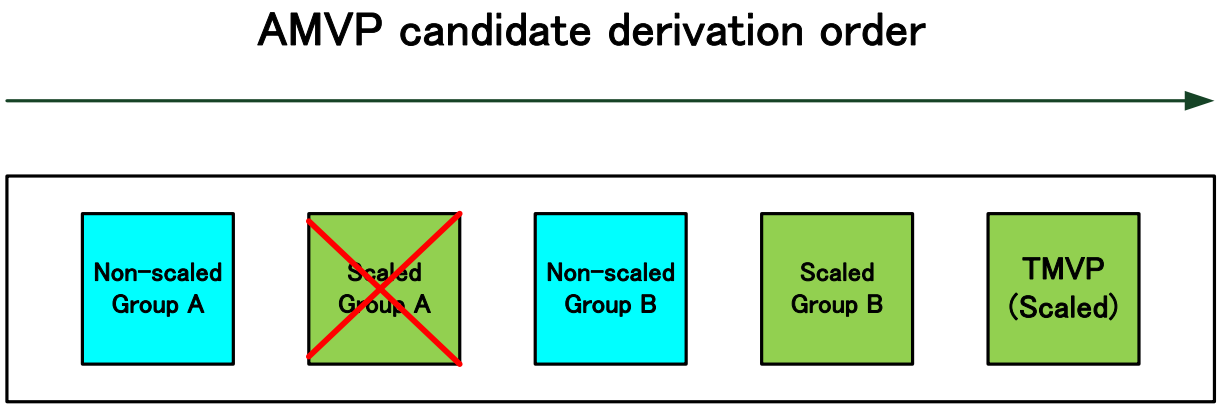
# Proposed algorithm

- Remove the condition checks
- Left group: Can not derive scaling candidate
- Above group: Can derive scaling candidate



# Benefits

- Two condition checks removed
- Fix scaling circuit only for above group
- Text and software simplified
- Non-scaled candidate always prioritized than scaled candidate



# 3. Experiments

# Experiments

| | Random Access Main | | | Random Access HE10 | | |
|---|---|---|---|---|---|---|
| | Y | U | V | Y | U | V |
| Class A | 0.1% | 0.1% | 0.2% | 0.0% | 0.1% | 0.1% |
| Class B | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% |
| Class C | 0.0% | 0.1% | 0.0% | 0.0% | 0.1% | -0.1% |
| Class D | 0.1% | 0.0% | 0.1% | 0.0% | 0.1% | -0.1% |
| Class E | | | | | | |
| **Overall** | 0.1% | 0.0% | 0.1% | 0.0% | 0.1% | 0.0% |
| | 0.1% | 0.1% | 0.1% | 0.0% | 0.1% | 0.0% |
| Class F | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% |
| Enc Time[%] | | 100% | | | 100% | |
| Dec Time[%] | | 101% | | | 102% | |

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| | Low delay B Main | | | Low delay B HE10 | | |
|---|---|---|---|---|---|---|
| | Y | U | V | Y | U | V |
| Class A | | | | | | |
| Class B | 0.0% | -0.3% | -0.1% | -0.1% | -0.2% | 0.2% |
| Class C | 0.0% | 0.1% | 0.0% | -0.1% | -0.1% | 0.0% |
| Class D | 0.0% | -0.3% | -0.1% | -0.1% | -0.2% | -0.5% |
| Class E | 0.0% | 0.1% | 0.3% | 0.0% | 0.0% | 0.3% |
| **Overall** | 0.0% | -0.1% | 0.0% | -0.1% | -0.1% | 0.0% |
| | 0.0% | -0.1% | 0.0% | -0.1% | -0.1% | 0.0% |
| Class F | -0.1% | 0.4% | 0.3% | 0.0% | -0.1% | 0.6% |
| Enc Time[%] | | 100% | | | 100% | |
| Dec Time[%] | | 99% | | | 100% | |

| | Low delay P Main | | | Low delay P HE10 | | |
|---|---|---|---|---|---|---|
| | Y | U | V | Y | U | V |
| Class A | | | | | | |
| Class B | 0.0% | -0.2% | -0.2% | -0.1% | -0.2% | -0.2% |
| Class C | 0.0% | -0.5% | -0.2% | 0.0% | -0.1% | 0.0% |
| Class D | 0.0% | 0.4% | -0.6% | -0.1% | 0.7% | -0.2% |
| Class E | -0.1% | 0.1% | 0.6% | 0.0% | 0.5% | -0.4% |
| Class F | 0.1% | 0.4% | 0.2% | 0.0% | 1.1% | 0.2% |
| **Overall** | 0.0% | 0.0% | -0.1% | 0.0% | 0.4% | -0.1% |
| | 0.0% | 0.0% | -0.1% | 0.0% | 0.3% | 0.0% |
| Enc Time[%] | | 100% | | | 100% | |
| Dec Time[%] | | 99% | | | 99% | |

# 4. Conclusion

# Conclusion

- Benefits
  - Two condition checks removed
  - Fix scaling circuit only for above group
  - Text and software simplified
  - Non-scaled candidate always prioritized than scaled candidate
- Recommendation
  - Adopted to DIS and HM

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