

Core Experiment Results of the Kwangwoon Univ. on CE2

JVT - T113

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Introduction

- Propose illumination compensation method for multi-view video coding
- Extended weighted prediction
 - To comply with the weighted prediction in the H.264/AVC
 - Macro-block based weighted prediction
 - Slice header has slice weight values
 - Each macro-block header has weight and offset value

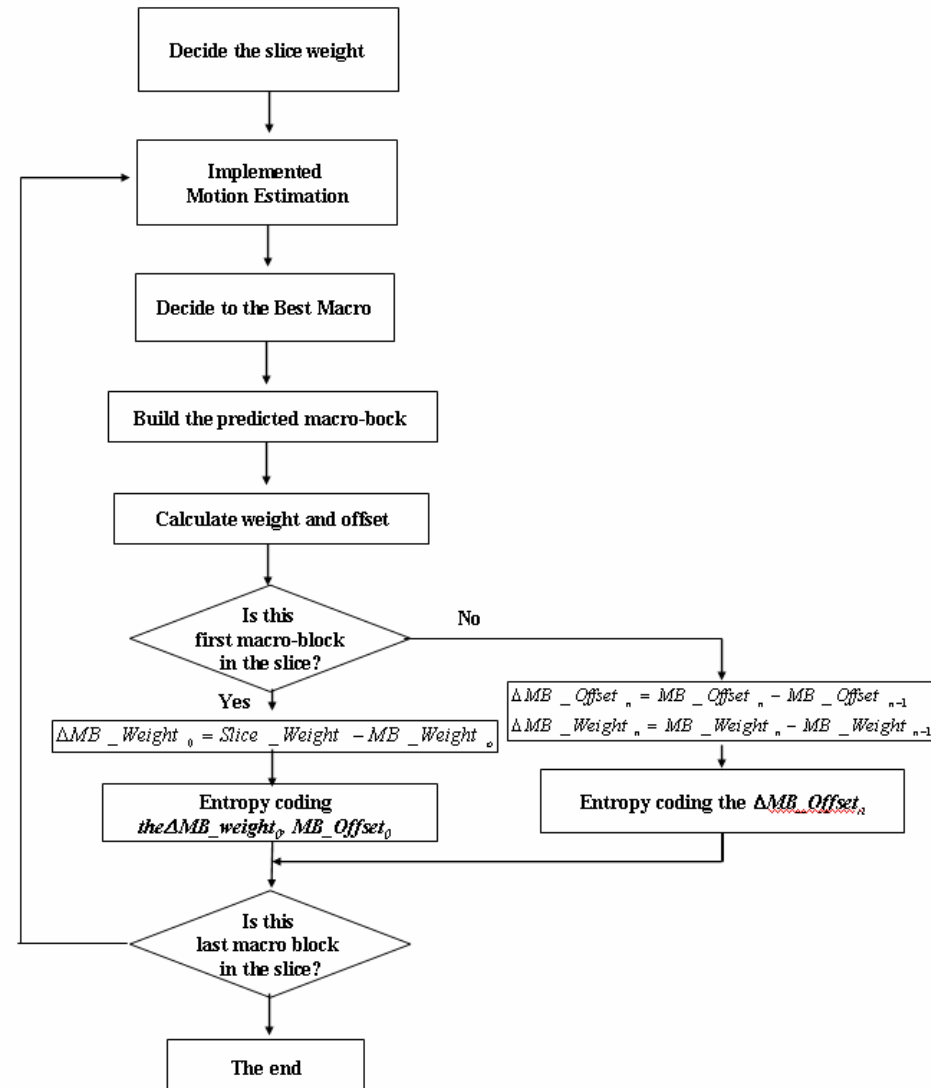
Computation of weight and offset parameters

- Decide slice weight value
- Conduct illumination invariant ME

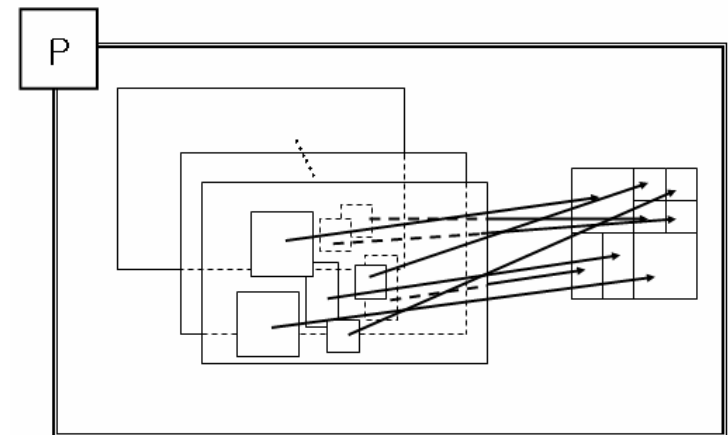
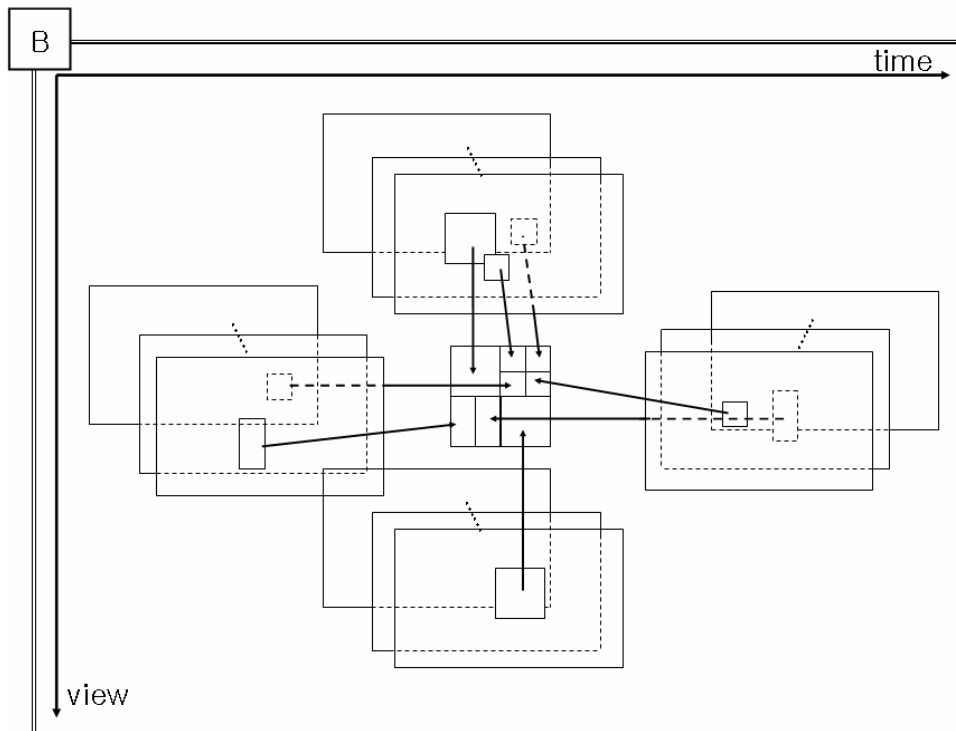
$$NSAD(x, y) = \sum_{i=0}^I \sum_{j=0}^J \left| \left(f(i, j) - \frac{\sum_{i=0}^I \sum_{j=0}^J f(i, j)}{I \times J} \right) - \left(r(i+x, j+y) - \frac{\sum_{i=0}^I \sum_{j=0}^J r(i+x, j+y)}{I \times J} \right) \right|$$

- Build the predicted macro block
- Calculate weight and offset
- Calculate delta weight and offset

$$CSAD(x, y) = \sum_{i=0}^I \sum_{j=0}^J |f(i, j) - W \times p(i, j) - O|$$

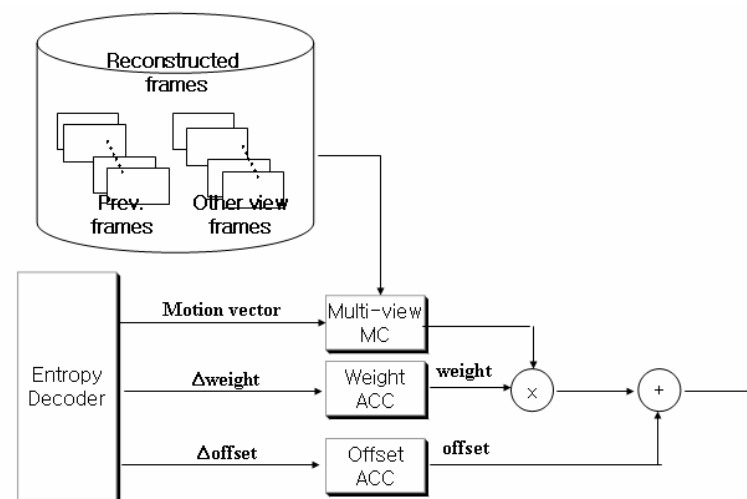


Example of building the predicted macroblock



Extended weighted prediction in decoder

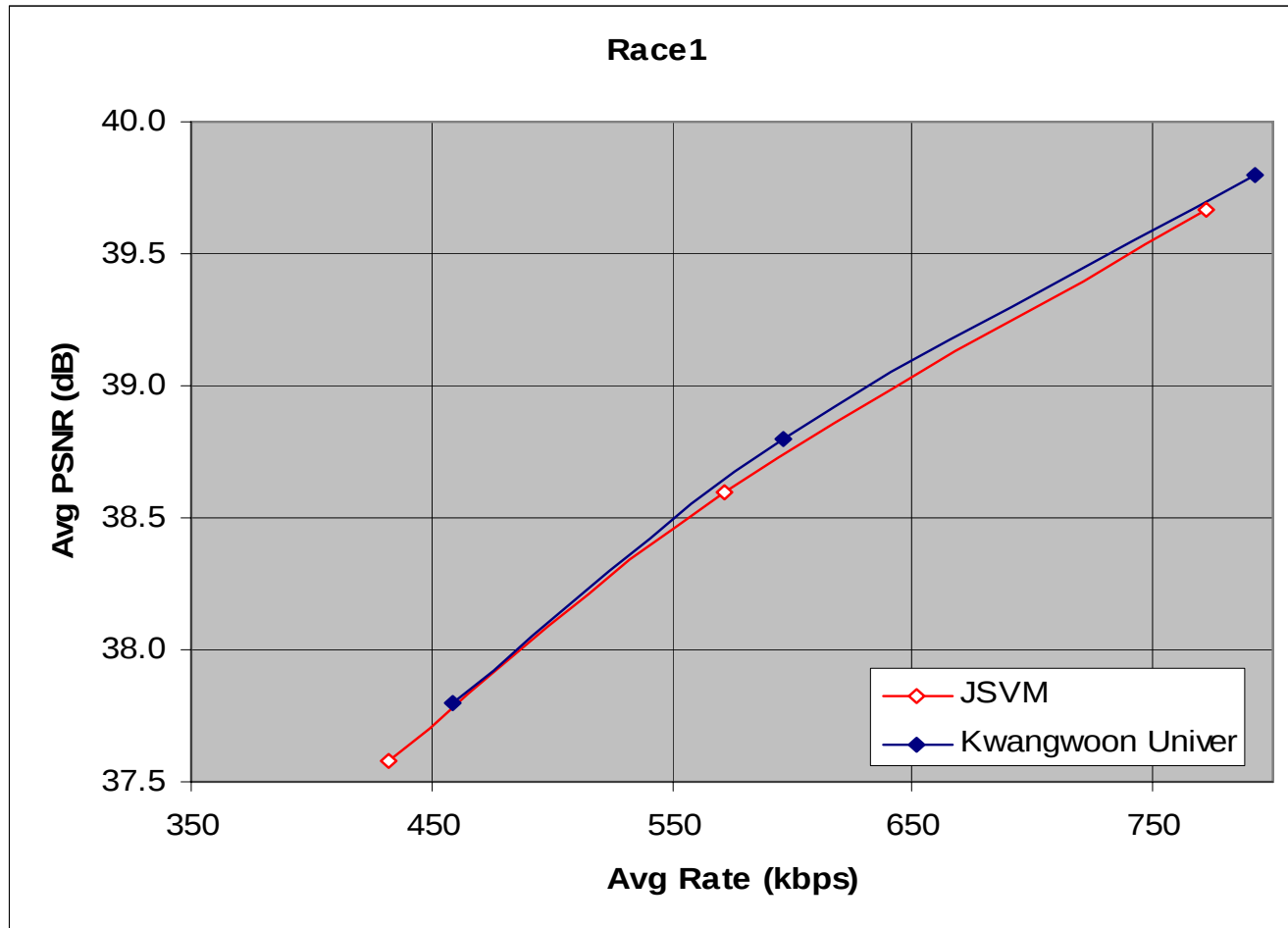
- Parameters to be transmitted into a decoder side
 - Slide level: Slice weight
 - Macro-block level:
 - Differential macroblock weight
 - Differential macroblock offset
- Reconstructs current macro-block pixel value according to the following formula
 - $CurMB(x, y) = MB_Weight \times R(x + mv_x, y + mv_y) + MB_Offset$
 - $MB_Offset = MB_Offset_{n-1} + \Delta offset_n$
 - $MB_Weight = MB_Weight_{n-1} + \Delta weight_n$



Preliminary result

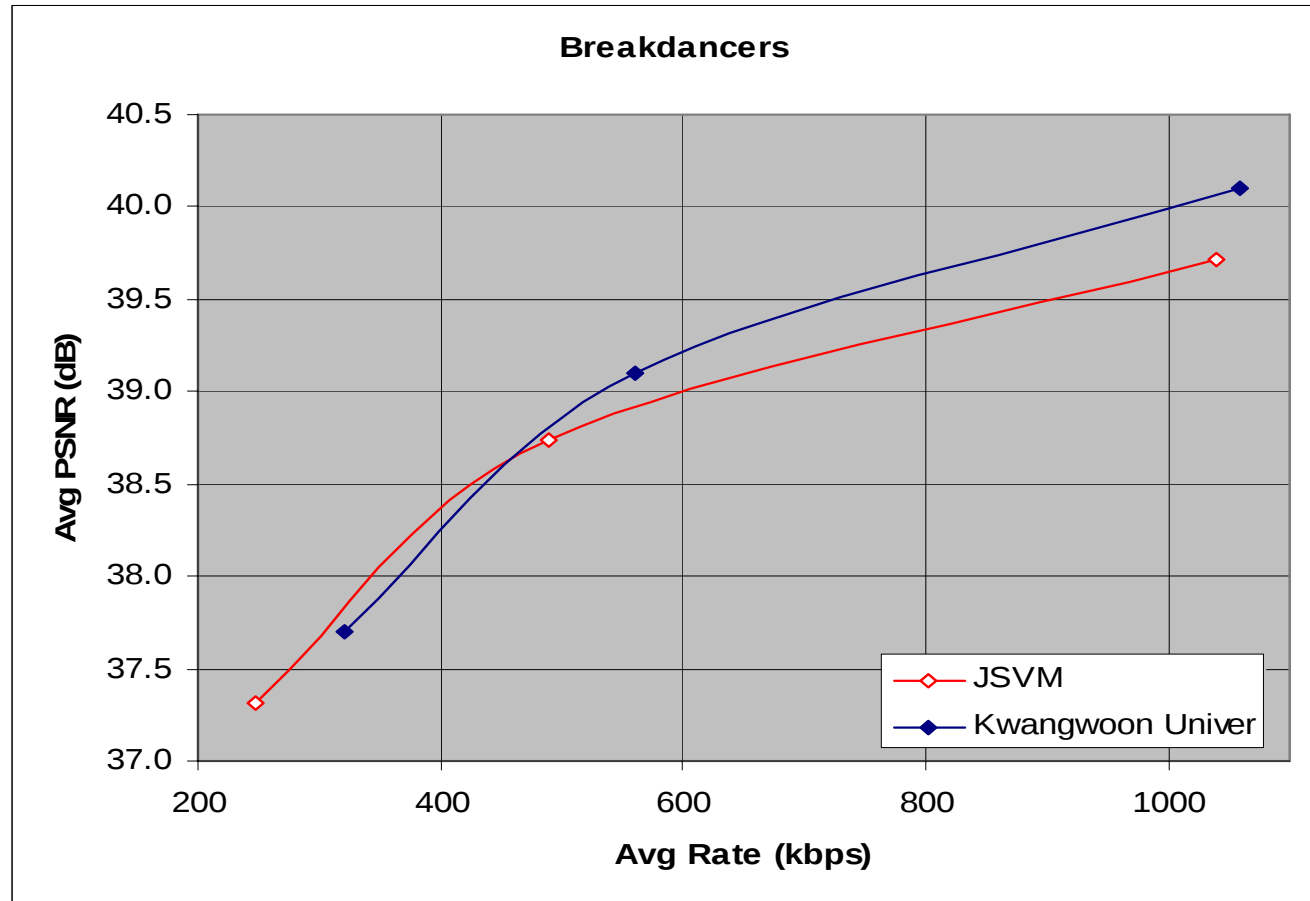
- Our performance evaluation was conducted on the encoder side.
- Found a bug on the RD-Optimization in computing the weight and offset values
 - Performance is degraded for some sequences
- Found a mismatch problem between the encoder and decoder.
- Planning to fix the bug and report the results at the next meeting.

Race1 sequence



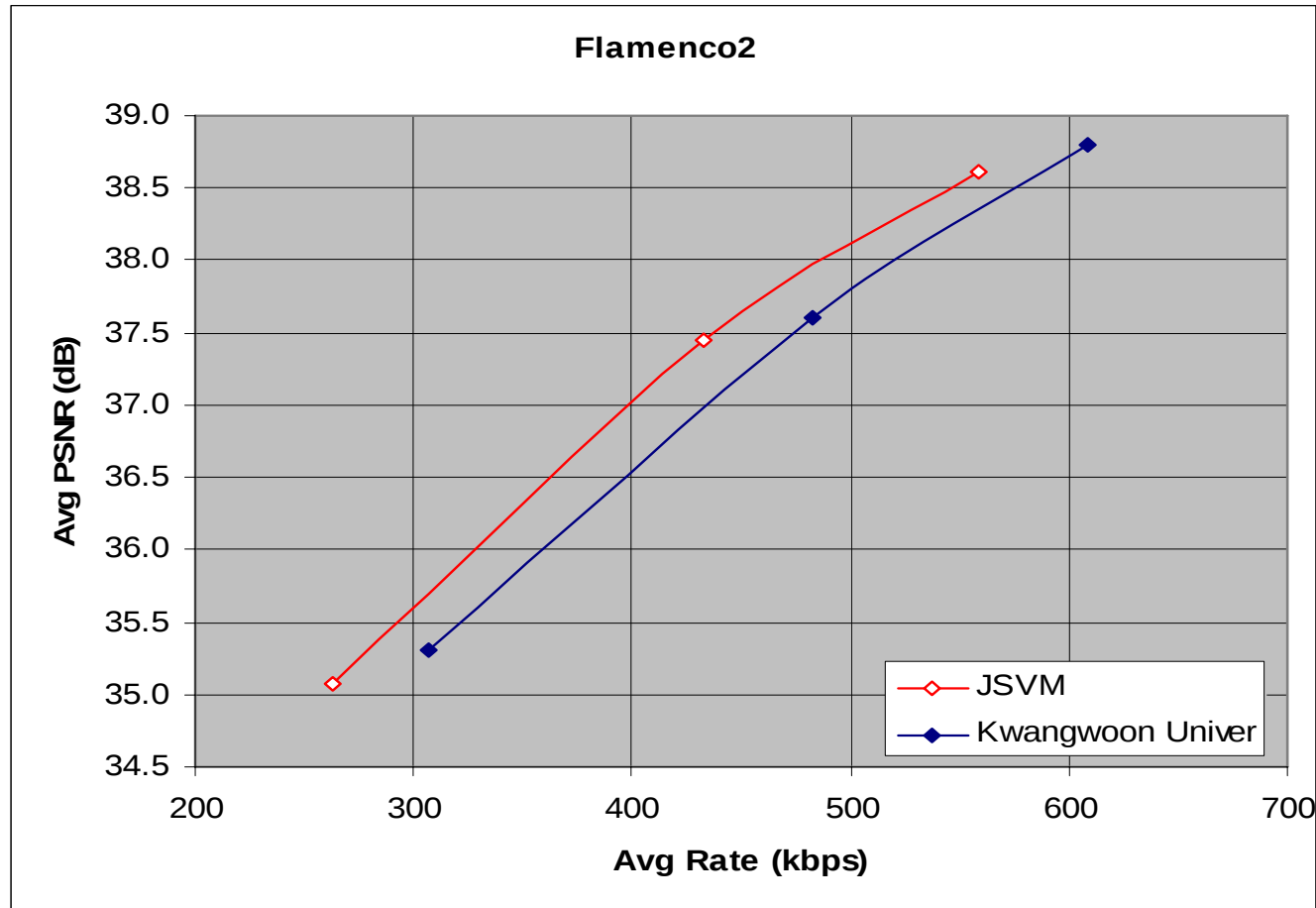
Comparison of PSNR with JSVM and proposed method for the Race1sequence

Breakdancers sequence



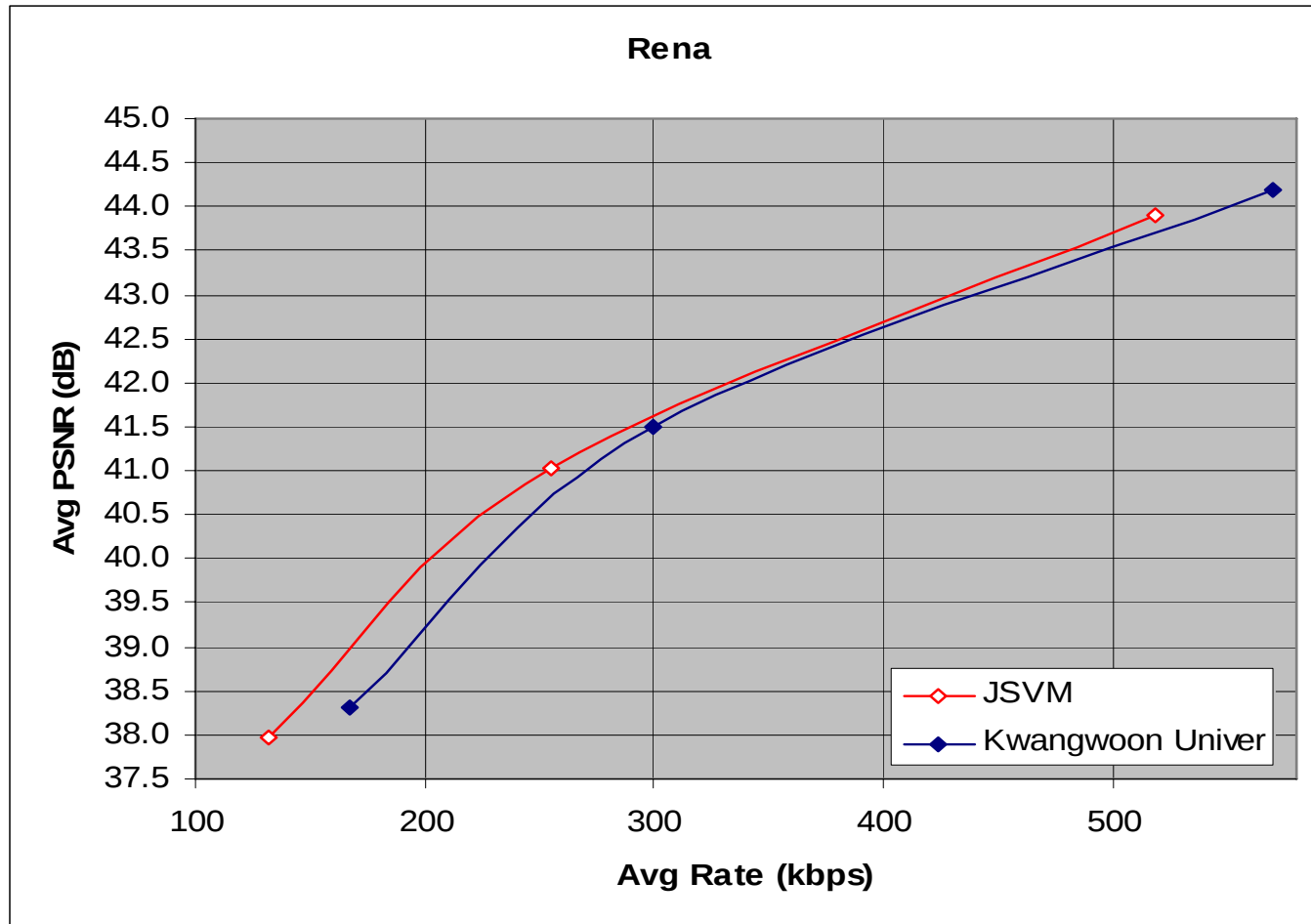
Comparison of PSNR with JSVM and proposed method for the Breakdancers sequence

Flamenco2 sequence



Comparison of PSNR with JSVM and proposed method for the Flamenco2 sequence

Rena sequence



Comparison of PSNR with JSVM and proposed method for the Rena sequence

Q & A

Thank you!