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**Title: Core Experiment on View-temporal Prediction Structures
 (CE1 D: KDDI)**

Source: GIST

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Status: CE Report

1. Introduction

At the 75th MPEG meeting in Bangkok, Thailand, a description of core experiments on MVC was released [1]. According to the document, we conducted a core experiment on view-temporal prediction structures of CE1 D: KDDI. This document describes the procedure and results of the core experiment.

2. Core Experiment

The core experiment was conducted at GIST using eight test sequences and an MVC (multi-view video coding) software package (JSVM_3_5), released from Fraunhofer-HHI. Fraunhofer-HHI divided MVC into four steps: sorting, encoding, decoding, and resorting. The MVC software package consists of source codes, configuration files, and batch files for each step. KDDI did not modify the source code of each program. KDDI implemented their scheme by changing some options in sorting and encoding configuration files except for Akko&Kayo sequence. Due to the time limitation, we did not compare experimental results; however, we analyzed their implementation.

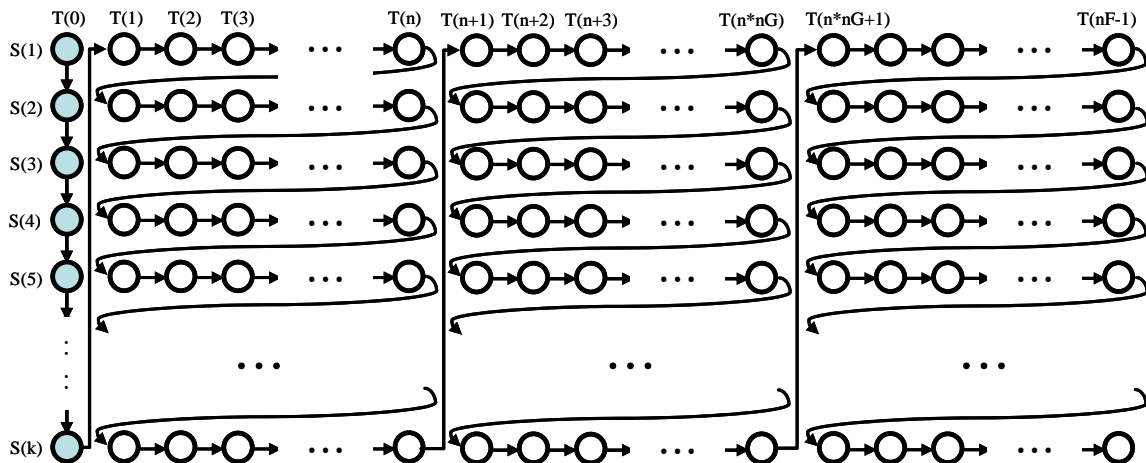


Fig. 1. General structure for frame reordering

2.1. Frame Reordering

The proposed frame reordering scheme reorders sequences in the order near the center. It was named as sorting in MVC software package, and it combines several view sequences into one sequence by the orders specified in Table 1. Because the current MVC software not yet supports the parallel process, generally we use the reordering scheme for easy implementation and efficient memory management. KDDI implemented their scheme by changing the sequence orders in sorting configuration files. Figure 1 shows the general reordering method. k , n , nG , and nF represent the number of views, GOP length, number of GOP, and number of frame, respectively. Table 1 shows reordering parameters for each sequence. Figure 2, 3, and 4 show the camera arrangement for Flamenco2, Rena, and Akko&Kayo, respectively [2].

Table 1. Reordering parameters for each sequence

Test Sequences	Number of Views (k)	GOP Length (n)	Number of GOP (nG)	Number of Frame (nF)	View Orders
Ballroom	8	12	20	250	3-4-2-5-1-6-0-7
Exit	8	12	20	250	3-4-2-5-1-6-0-7
Uli	8	12	20	250	4-5-3-6-2-7-1-8
Race1	8	15	35	532	3-4-2-5-1-6-0-7
Flamence2	5	15	66	1000	2-1-0-3-4
Breakdancers	8	15	6	100	3-4-2-5-1-6-0-7
Rena	15	15	19	300	48-47-46-49-50-28-27-26-29-30-68-67-66-69-70
Akko&Kayo	16	15	19	300	45-46-44-47-43-48-42-49-41-50-40-51-39-52-38-53

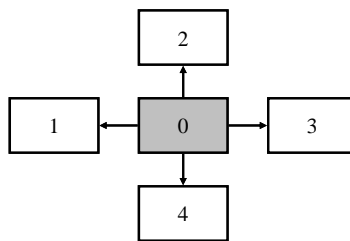


Fig. 2. Camera arrangement for Flamenco2

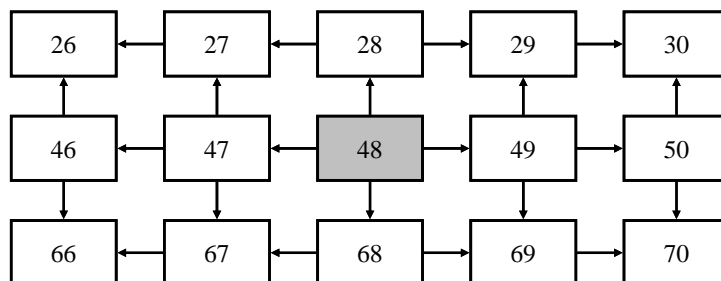


Fig. 3. Camera arrangement for Rena



Fig. 4. Camera arrangement for Akko&Kayo

2.2. Prediction Structure

KDDI employs temporal hierarchical-B pictures with view reordering scheme. Figure 5 shows an example of the prediction structure. To implement this, KDDI changed the *SequenceFormatString* option in encoding configuration files. The *SequenceFormatString* contains information about the sequence structure together with Memory Management Control Operation (MMCO) and Reference Picture List Reordering (RPLR) commands. We can know *SequenceFormatString* by reading the *SequenceFormatStringSpecification.doc* [3] in the latest JSVM software.

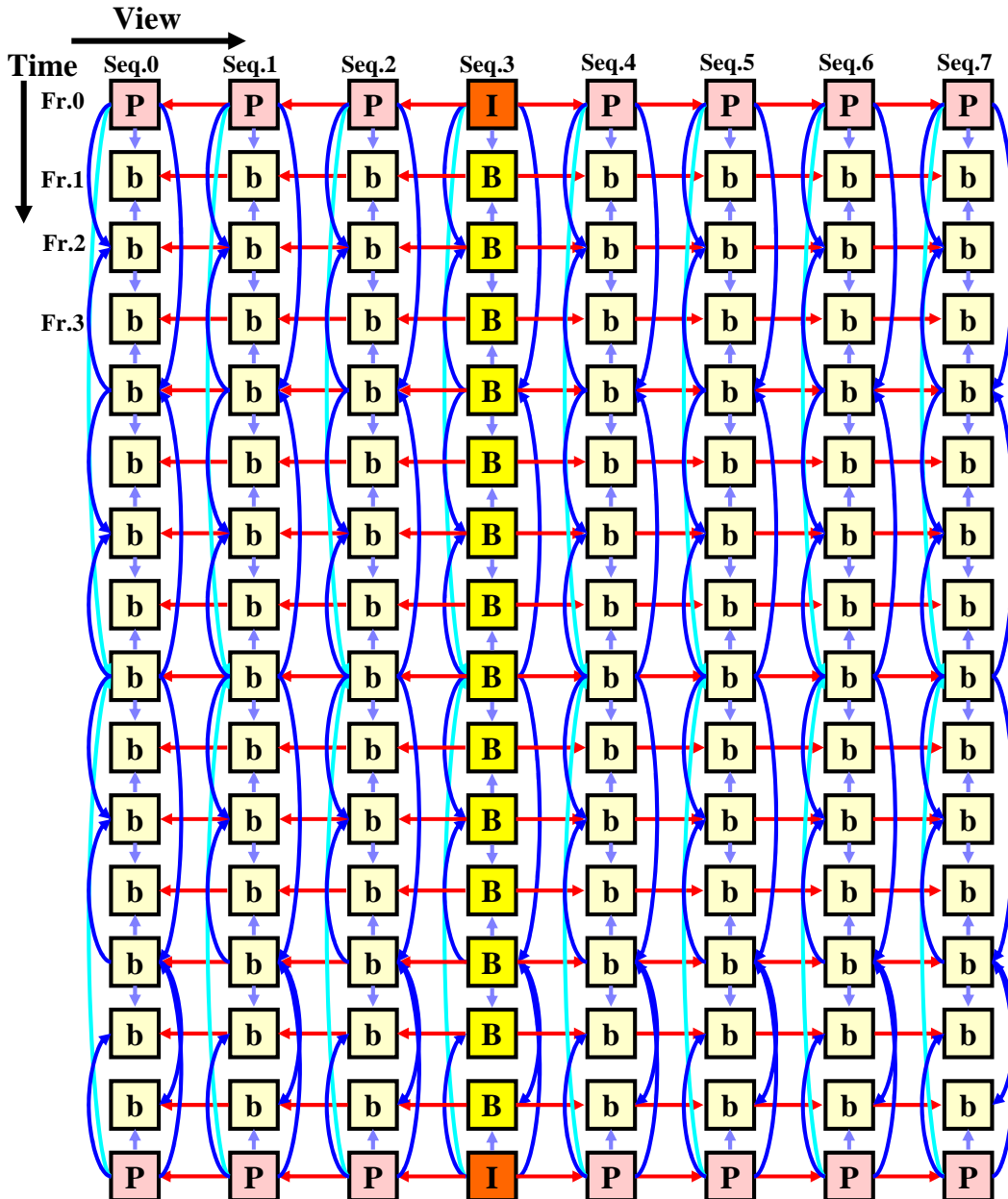


Fig. 5. View-temporal Prediction Structure

3. Results

Due to the time limitation, we did not get the results of experiments.

4. Conclusion

KDDI proposed the view-temporal prediction structure based on a temporal hierarchical-B pictures and a view reordering scheme. We confirmed that KDDI implemented their algorithm without tricks or errors. However, since we did not get the simulation results, we can not make sure if their results are correct.

5. References

- [1] ISO/IEC JTC1/SC29/WG11 w7798, "Description of Core Experiment in MVC," January 2006.
- [2] ISO/IEC JTC1/SC29/WG11 m12969/KDDI/KDDIfor3DAV.doc, "Multiview Video Coding by Disparity Prediction from Center Sequence," January 2006.
- [3] SequenceFormatStringSpecification.doc