m59514
[EE 13.50] Report on Triangle soup

Kyohei Unno, Kei Kawamura

KDDI Corp. (KDDI Research, Inc.)

Copyright(C) 2022 KDDI Research, Inc. All Rights Reserved.

Overview

■ Goal of EE13.50

- Study proposals related to Trisoup.

■ Study Items

1. Trisoup coding performances (especially at the highest rate point).
2. Variable node size extension.
3. Optimization of the projection plane determination.

■ Experimental results

- No new experimental result is reported as EE report.
- RD curves for solid sequences are introduced related to study item 1.

■ Related contribution

- Seven contributions input by Xiaomi.

Copyright(C) 2022 KDDI Research, Inc. All Rights Reserved.

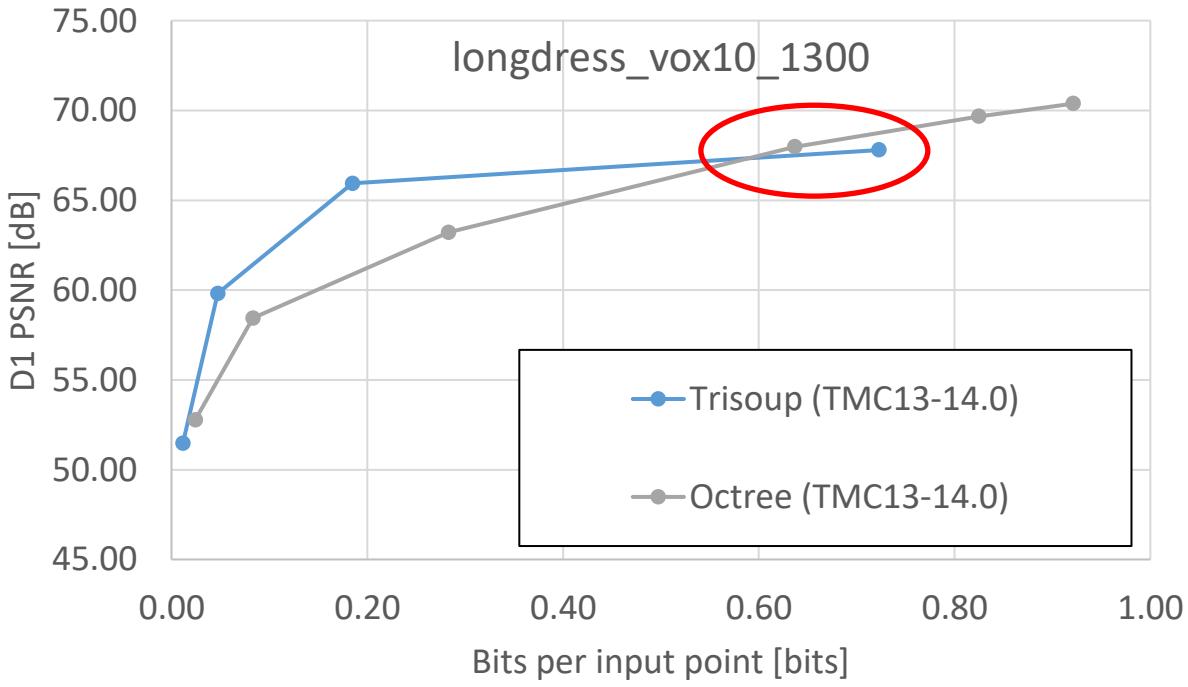
Background

- **Variable node size extension of Trisoup has been studied in this EE.**

- **Discussion in the previous Jan. meeting**
  - Coding performances of Trisoup (fixed node size) are poor especially at the highest rate point.
  - It was agreed that firstly we focus on improving fixed node size Trisoup.

- **Current study items**
  1. Trisoup coding performances.
  2. Variable node size extension.
  3. Projection plane determination.

- **KDDI is still working on study item 1.**



Copyright(C) 2022 KDDI Research, Inc. All Rights Reserved.

RD Curves (Octree, Trisoup (Fixed), vs. Trisoup (Variable))

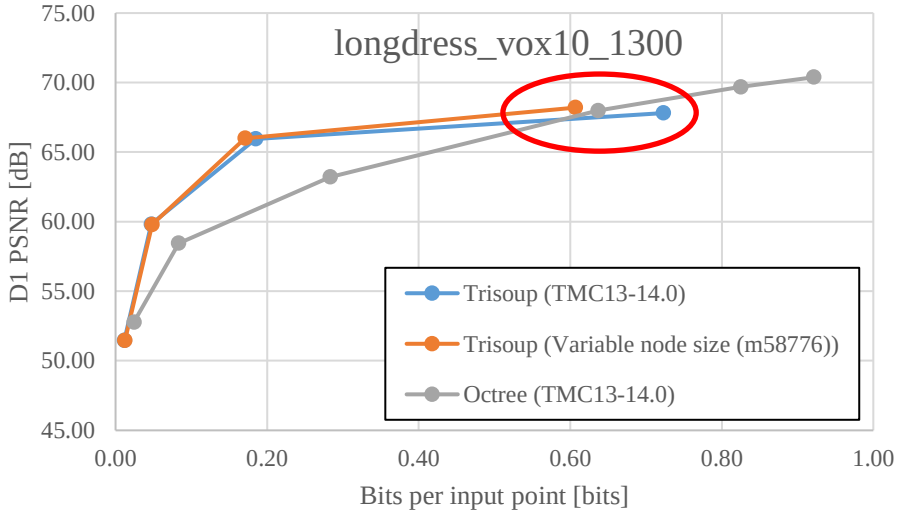
KDDI Research

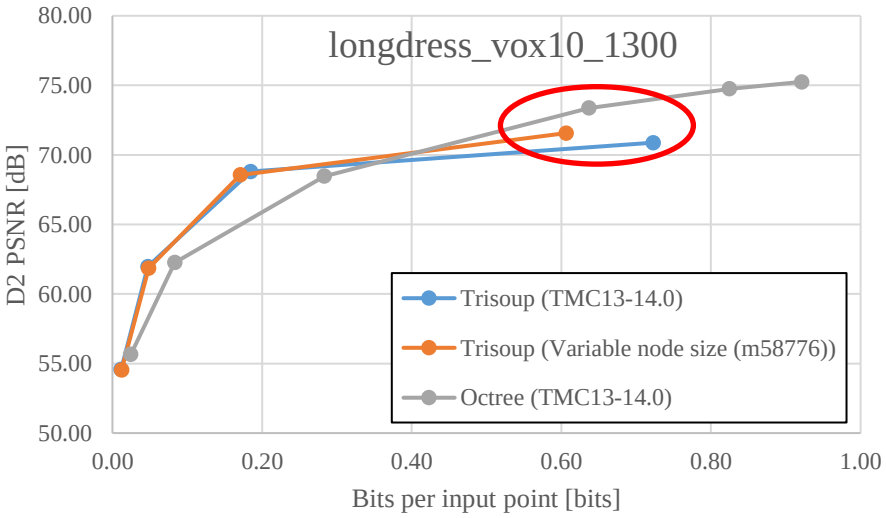
■ Methods

- Octree : TMC13-v14.0
- Trisoup (Fixed node size) : TMC13-v14.0
- Trisoup (Variable node size) : m58776

■ Sequences

- Solid class



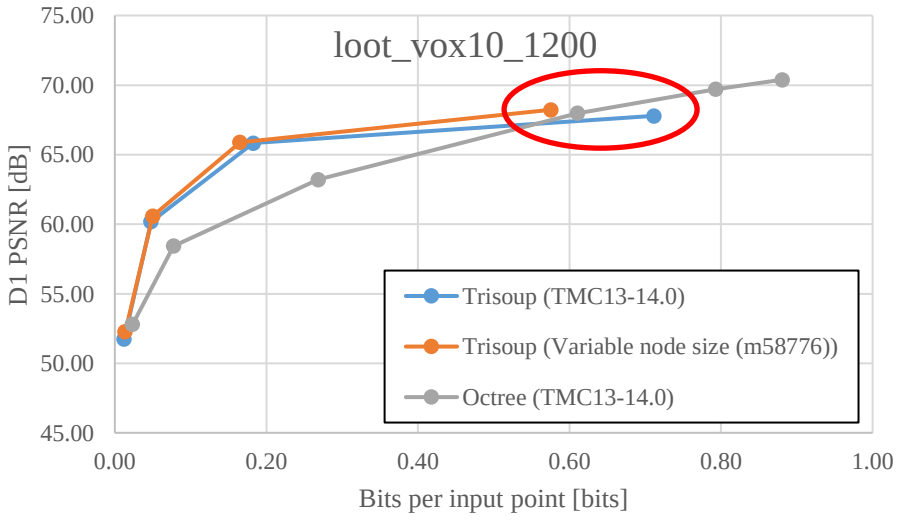


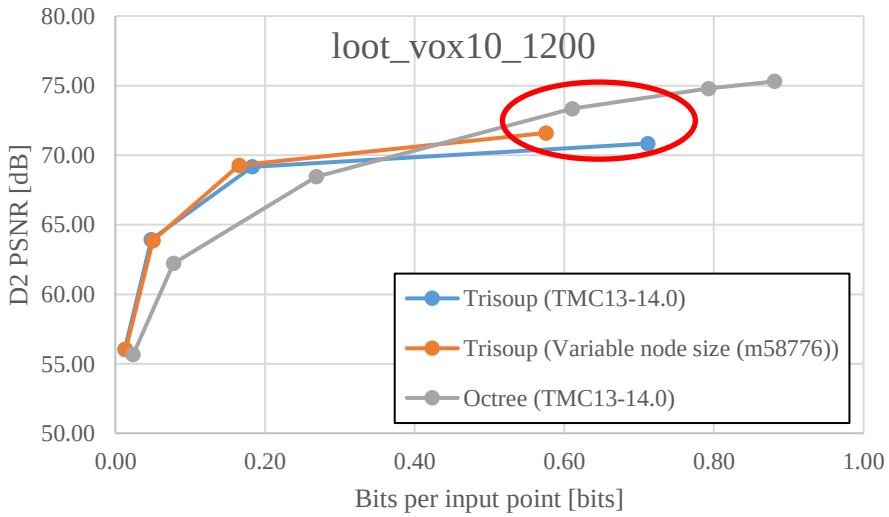
RD curves of longdress

Copyright(C) 2022 KDDI Research, Inc. All Rights Reserved.

RD Curves (Cont.)

- **RD curves for solid class sequences can be found in m59514.xlsx (attached).**
- **All sequences have similar tendencies:**
  - Cording performances of fixed node size Trisoup yield Octree at the highest rate point.
  - Cording performances at the highest rate points are improved by variable node size extension (especially for D1).





RD curves of loot

Copyright(C) 2022 KDDI Research, Inc. All Rights Reserved.

Related Contributions

■ **Seven contributions for improving Trisoup (study item 1.) are input by Xiaomi.**

m59288	[GPCC][TriSoup] Part 1 Improving TriSoup summary, results and perspective	S. Lasserre (Xiaomi)
m59289	[GPCC][TriSoup] Part 2 Fixes and simplifications	S. Lasserre (Xiaomi)
m59290	[GPCC][TriSoup] Part 3 Adding a residual for the centroid vertex	S. Lasserre (Xiaomi)
m59291	[GPCC][TriSoup] Part 4 Vertex Quantization	S. Lasserre (Xiaomi)
m59292	[GPCC][TriSoup] Part 5 Improved rendering from triangles	S. Lasserre (Xiaomi)
m59293	[GPCC][TriSoup] Part 6 Compression of vertex presence flag and vertex position	S. Lasserre (Xiaomi)
m59294	[GPCC][TriSoup] Part 7 Latest improvements	S. Lasserre, S. Gao (Xiaomi)

Thank Xiaomi for your great work!

Copyright(C) 2022 KDDI Research, Inc. All Rights Reserved.

Overview

■ Goal of EE13.50

- Study proposals related to Trisoup.

■ Study Items

1. Trisoup coding performances (especially at the highest rate point).
2. Variable node size extension.
3. Optimization of the projection plane determination.

■ Experimental results

- No new experimental result is reported as EE report.
- RD curves for solid sequences are introduced related to study item 1.

■ Related contribution

- Seven contributions input by Xiaomi.

■ Recommendation

- Review all of the related contributions in the MPEG week.

Copyright(C) 2022 KDDI Research, Inc. All Rights Reserved.