「新しい社会システムデザインに向けた情報基盤技術の創出」
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バッテリーレス・ワイヤレス動画収集機能をもつ高分散型監視システム

§1. 研究成果の概要

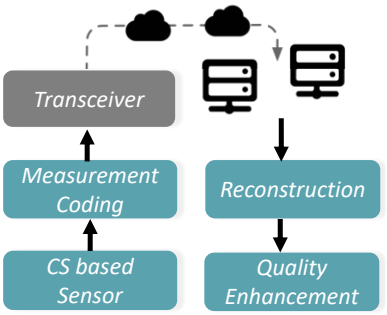

Figure 1. System overview

As show in Figure 1, the proposed video surveillance system is composed of four main components. In the encoder side, we integrated the compressive sensing (CS) based image sensor and the corresponding measurement coding to reduce the power by applying simplified coding algorithm. In the decoder side, decompression/reconstruction and quality enhancement were applied to ensure the video quality.

During the last year, we have achieved the following results for each component.

(1) Compressive sensing (CS) based image sensor. A new matrix was implemented to obtain high quality image.

(2) Measurement coding. A new measurement coding system was applied to get high compression ratio by using pixel-domain features. Comparing with the state-of-the-arts, the proposed system can greatly improve the coding efficiency, which increased 1.94dB – 2.3dB in PSNR and reduced 42% – 65% bitrate in terms of bit-per-pixel.

(3) Measurement decompression (reconstruction). We are improving the deep of measurement decompression by applying parallel processing techniques.

(4) Quality enhancement. The decoded video quality was improved by three techniques including super resolution, artifacts removing, and frame interpolation.

§2. 研究実施体制

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② 研究項目

- **Image sensing:** developing compressive sensing based image sensor
- **Compression of the sensed image:** compressing the sensed data which is called measurement
- **Decompression:** decompressing/reconstruction the transmitted data.
- **Quality improvement of the decompressed video:** improving the quality of the decompressed video
- **Quality evaluation：**evaluating the visual quality of the system