ABOUT THE PROJECT

Key words: compressive sensing, motion compensation, deep neural network
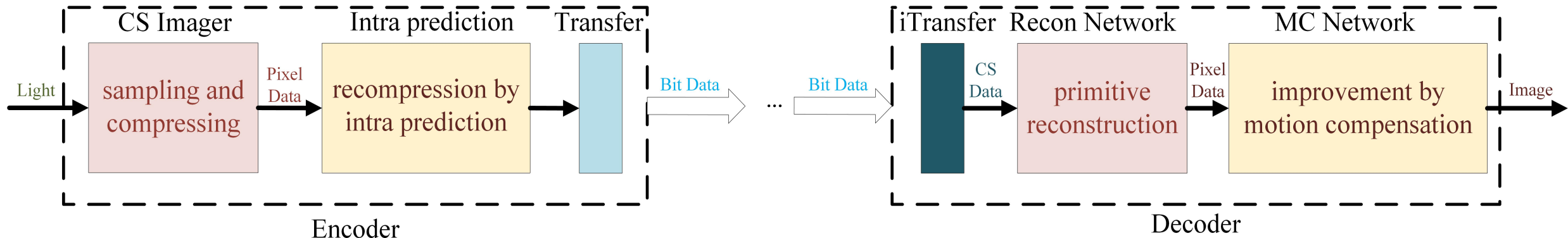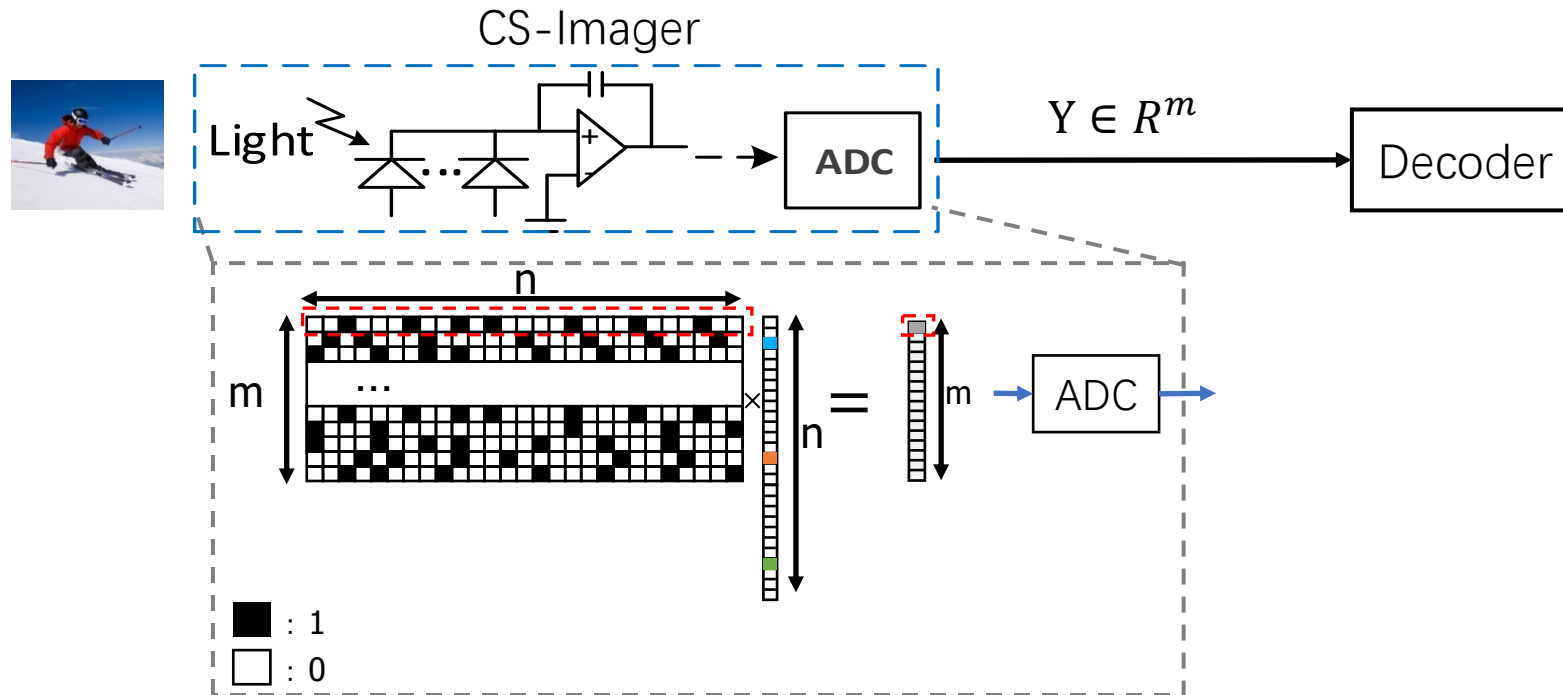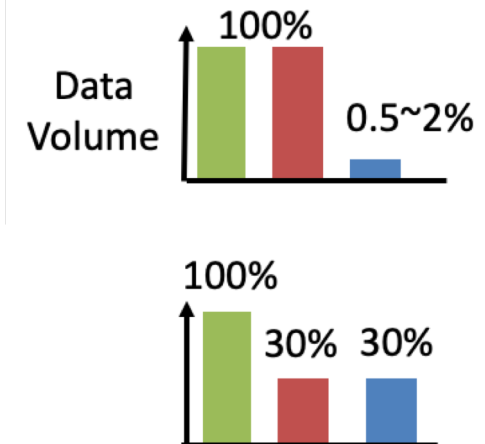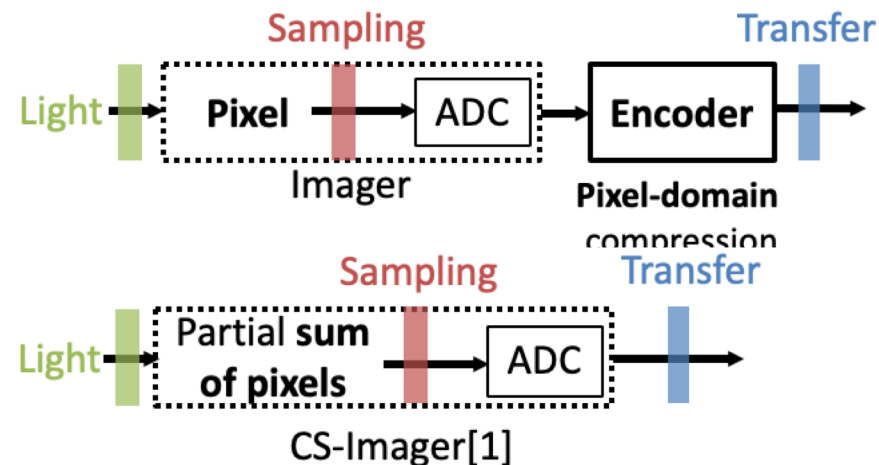

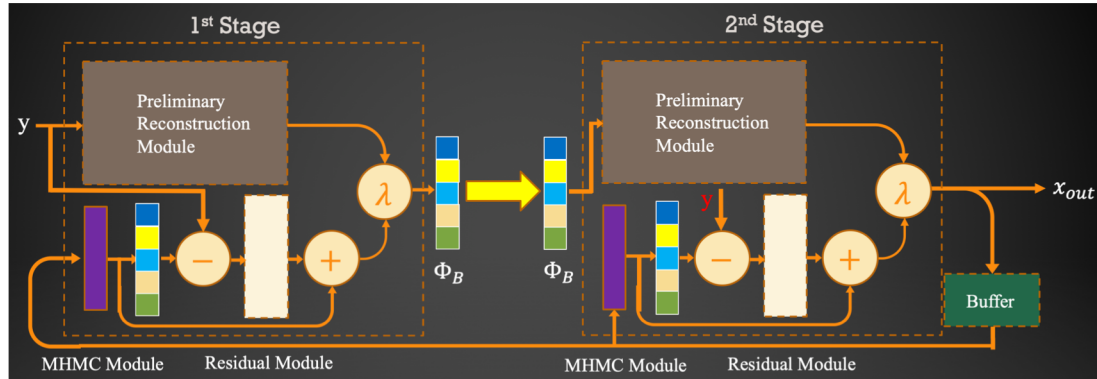Diagram of the CS encoder-decoder system

WHAT IS COMPRESSIVE SENSING

CS-Imager

$Y \in R^m$

Decoder

$$Y = AX$$

■ : 1
□ : 0

■ Traditional image acquisition:Sampling→ Compression (JPEG, HEVC) → Transfer

■ Compressive Sensing:Sampling/Compression → Transfer

RECENT WORK

Decoder

Decoder architecture

- Use Pytorch to build the reconstruction DNN.
- The model is based on an iterative optimization algorithm and has the characteristic of doing motion compensation.
- Compare with the state-of-the-art methods and proves improvements in reconstruction performance under different conditions.

Encoder(cooperate with team members)
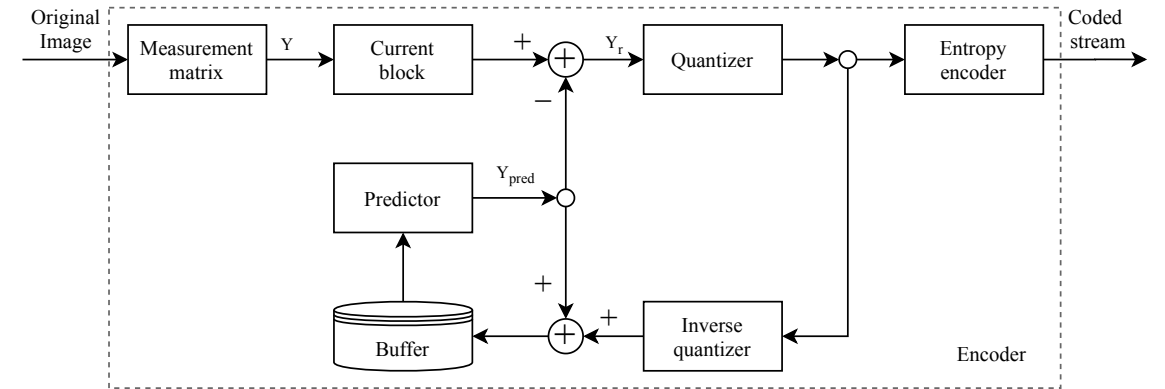
- Assist team members in exploring the algorithm which includes Intra-prediction for secondary compression. The algorithm can also help control the bit rate.
- Collaborate with team members on hardware architecture design of the encoder.

WHAT IS NEXT

- Do further improvements on reconstruction algorithm, especially on designing better motion compensation module.

- Do further refinement of the VLSI architecture design for encoders, based on existing results done by previous team members.
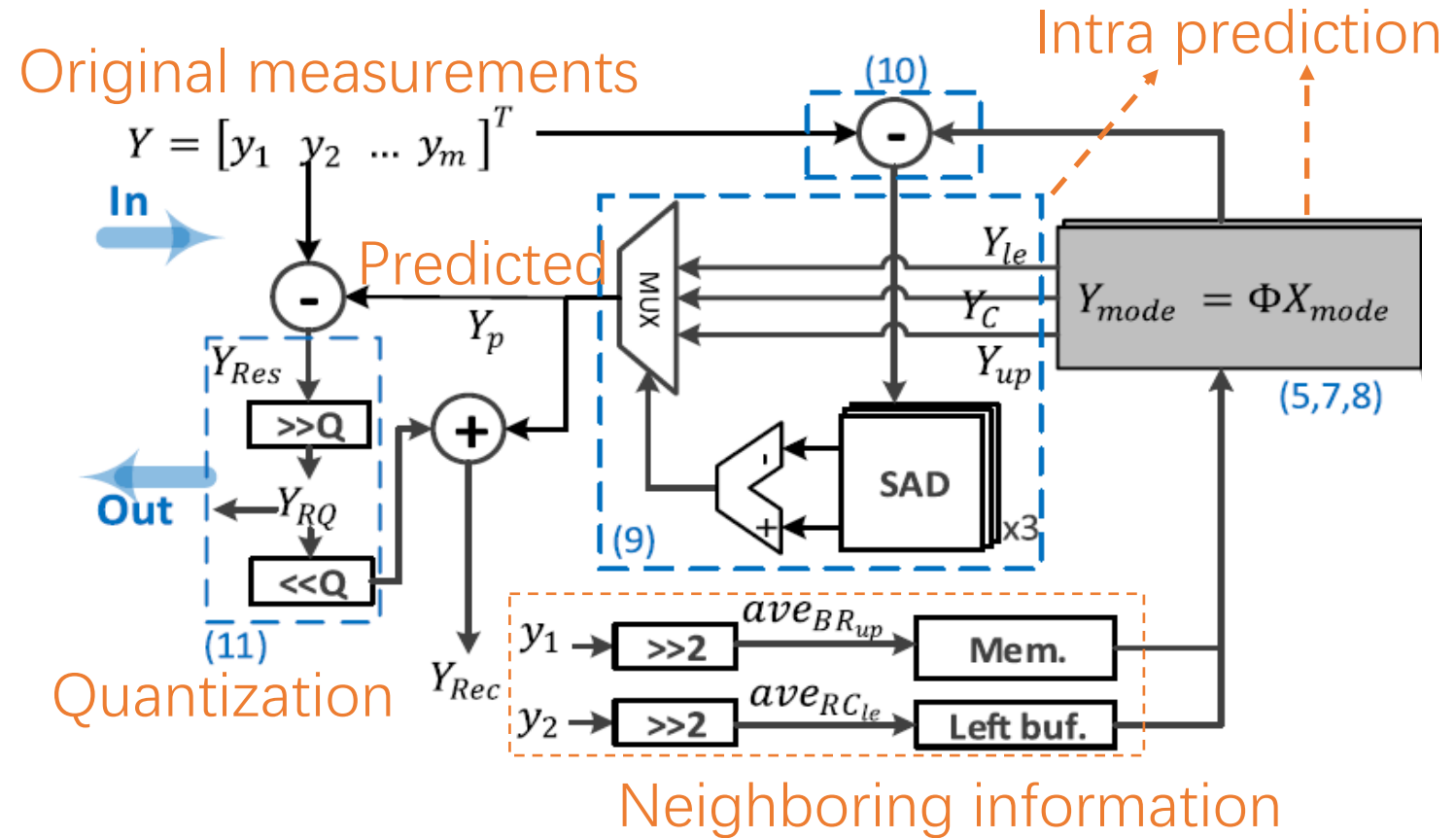
VLSI architecture design of the encoder done by previous team members