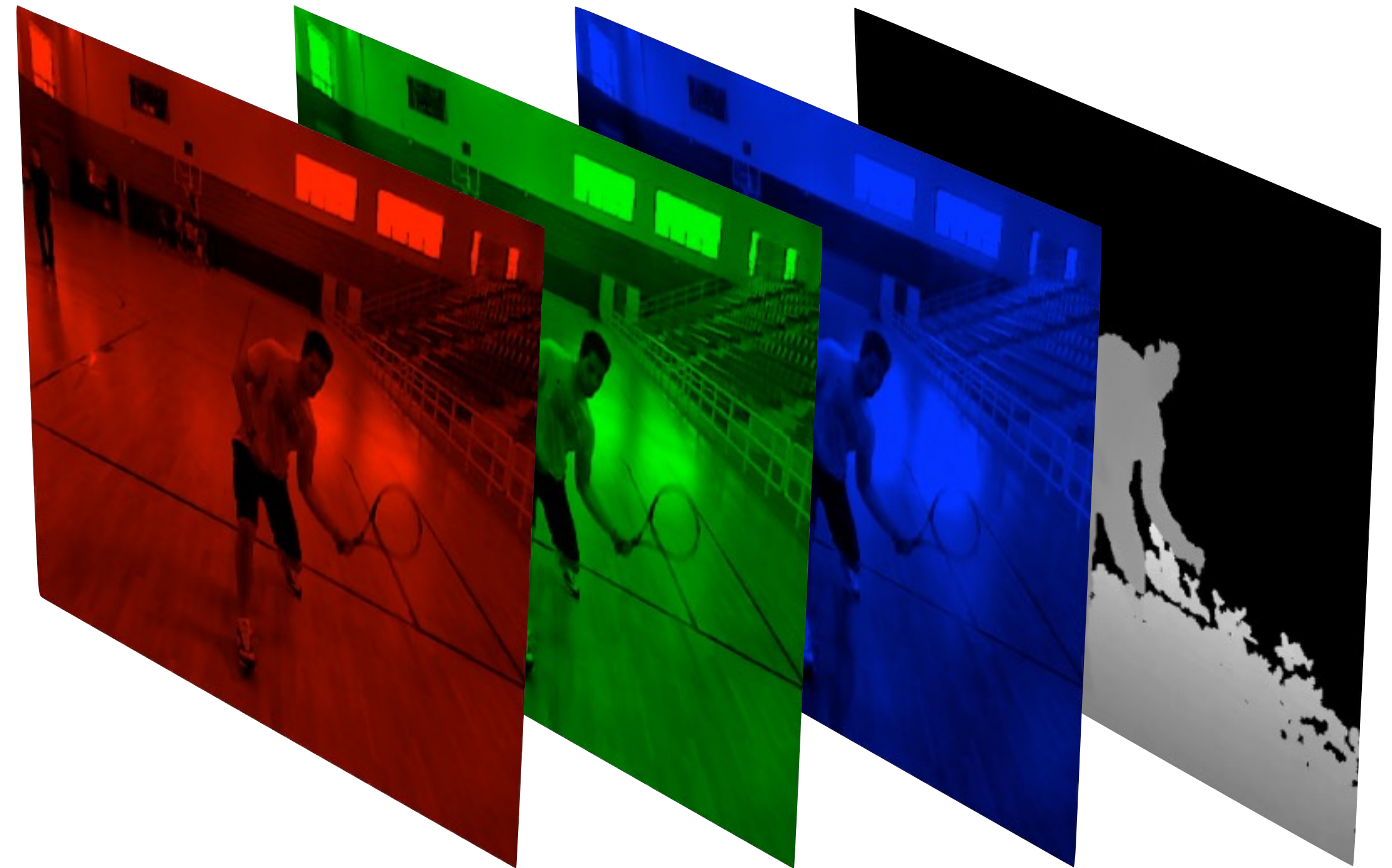# Preprocessing for THETIS

- Included the depth video to have **4 channels** for each frame

- Made all videos have same length by taking a fixed number of frames on either side of a manually assigned middle of each shot
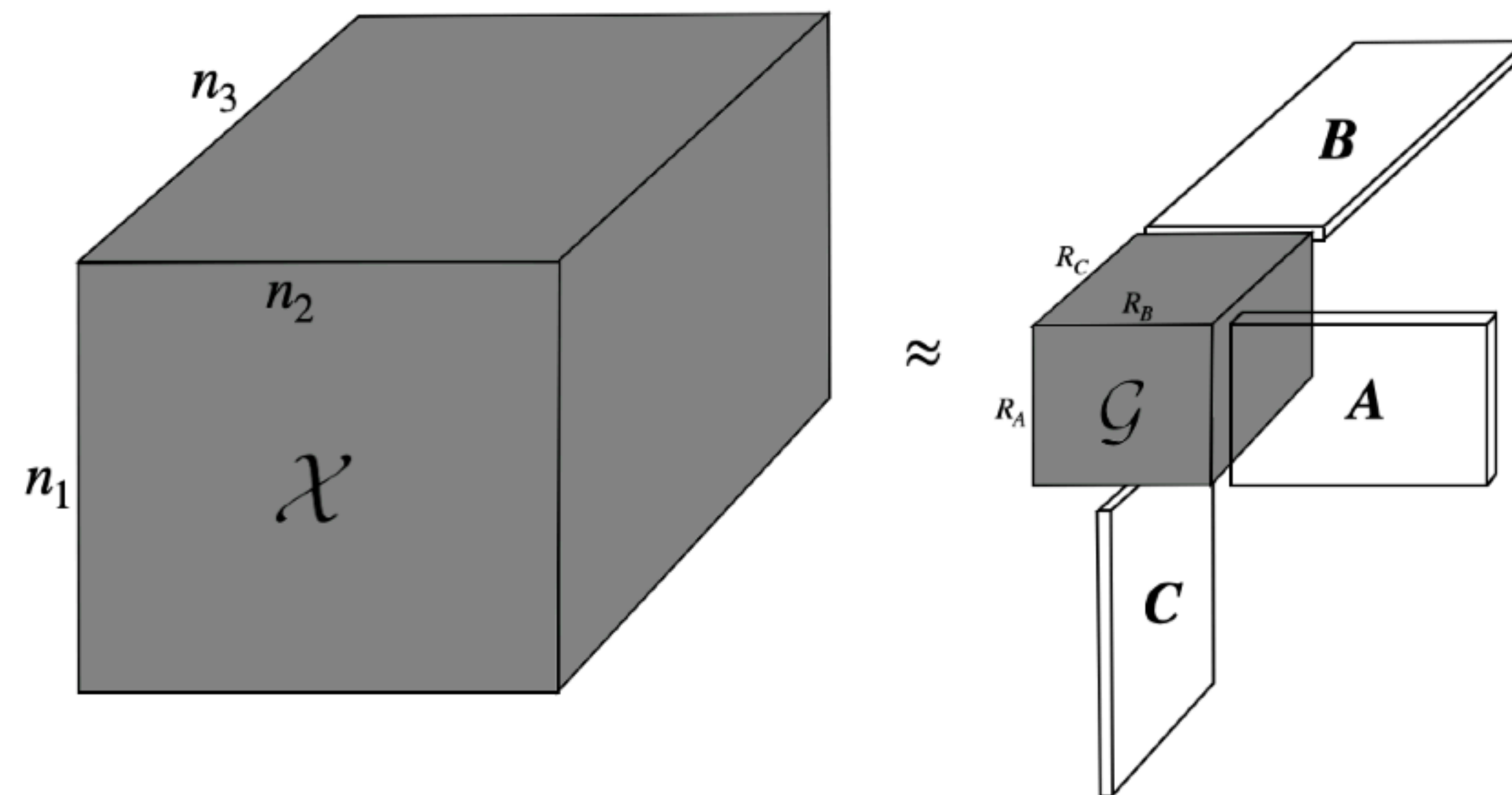
- Decreased resolution to 120 x 160

Each of the input channels of a single frame in a video

Tucker Decomposition

$$\mathcal{X}^{n_1 \times n_2 \times n_3} \approx \mathcal{G}^{R_A \times R_B \times R_C} \times_1 \boldsymbol{A}^{n_1 \times R_A} \times_2 \boldsymbol{B}^{n_2 \times R_B} \times_3 \boldsymbol{C}^{n_3 \times R_C}$$

$$\mathcal{X}(x_1, x_2, x_3) \approx \sum_{r_A=1}^{R_A} \sum_{r_B=1}^{R_B} \sum_{r_C=1}^{R_C} \mathcal{G}(r_A, r_B, r_C) \cdot \boldsymbol{A}(x_1, r_A) \cdot \boldsymbol{B}(x_2, r_B) \cdot \boldsymbol{C}(x_3, r_C)$$

Estimated using Higher-order orthogonal iteration