

# Appendix For Physiology-aware PolySnake For Coronary Vessel Segmentation

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## 1. Quantitative Visual Comparison

In Figure 1, 2, 3, we present a detailed visual comparison using sequential CT slices. The initial row displays test CCTA images in grayscale, while subsequent rows showcase outputs from different models: hierarchical convlstm with Deep Snake, hybrid UNeXt with Deep Snake, and our proposed Physiology-aware PolySnake. The numbers 1 to 5 in the upper line correspond to the sequential order of adjacent slices.

The displayed images emphasize the alignment between ground-truth segmentation regions and predicted boundary contours. In the visual representation, black represents the ground-truth background, white indicates the ground-truth artery wall, blue signifies the ground-truth lumen, yellow represents the ground-truth calcified plaque, and red corresponds to the ground-truth non-calcified plaque. Furthermore, the predicted exterior artery wall boundary is outlined in orange, while the predicted interior artery wall boundary is delineated in light blue.

Our proposed approach consistently outperforms competing methods by accurately capturing vessel wall shapes across diverse test samples with varying conditions. This superiority is evident not only in overall metrics but also in the trend of covering more plaque regions. These qualitative results underscore the effectiveness of our method for coronary wall segmentation.

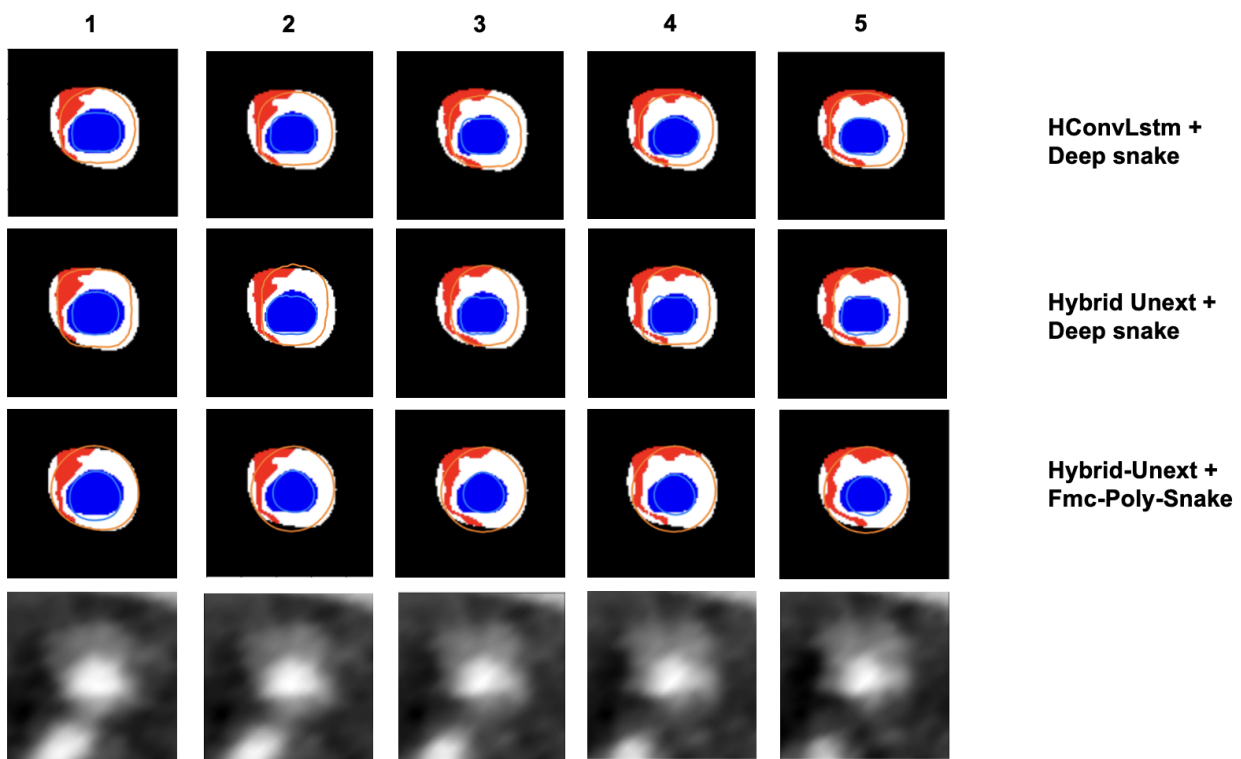


Figure 1. Quantitative Vision Comparison

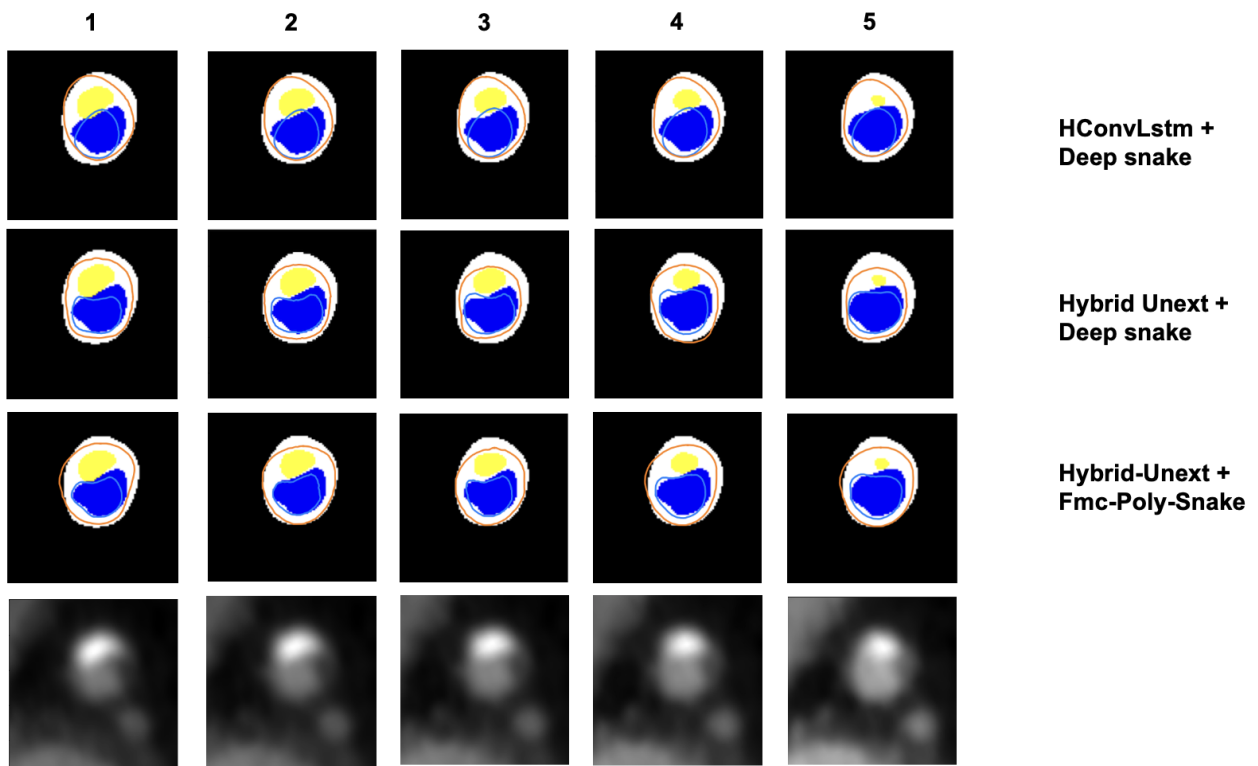


Figure 2. Quantitative Vision Comparison

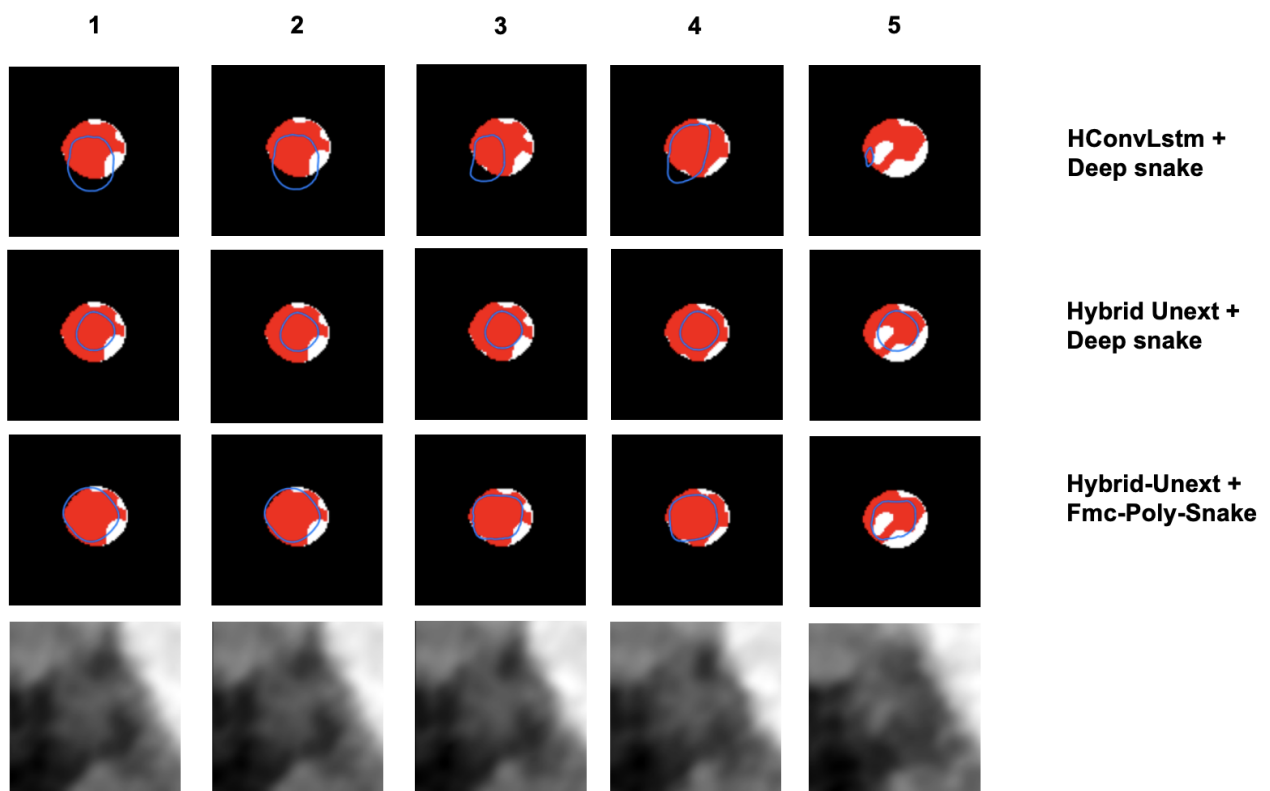


Figure 3. Quantitative Vision Comparison