Memory-Augmented SAM2 for Training-Free Surgical Video Segmentation

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Introduction

➢ Significance

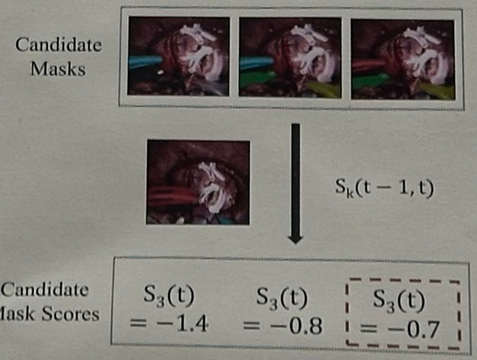
- A critical component of medical imaging and surgical scene analysis;
- Achieve pixel-level localization and contour extraction of instruments.

➢ Key Challenges

Time Flow →

Object Displacement

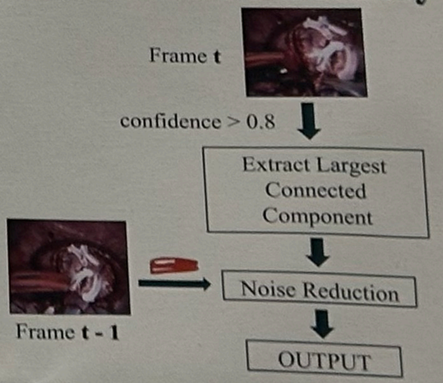
➢ Context-Aware Memory



Training-Free Tree Memory

- Tree-structured memory
- No additional training is required

➢ Occlusion-Resilient Memory



Candidate Generation

- Generate multiple candidate masks per frame