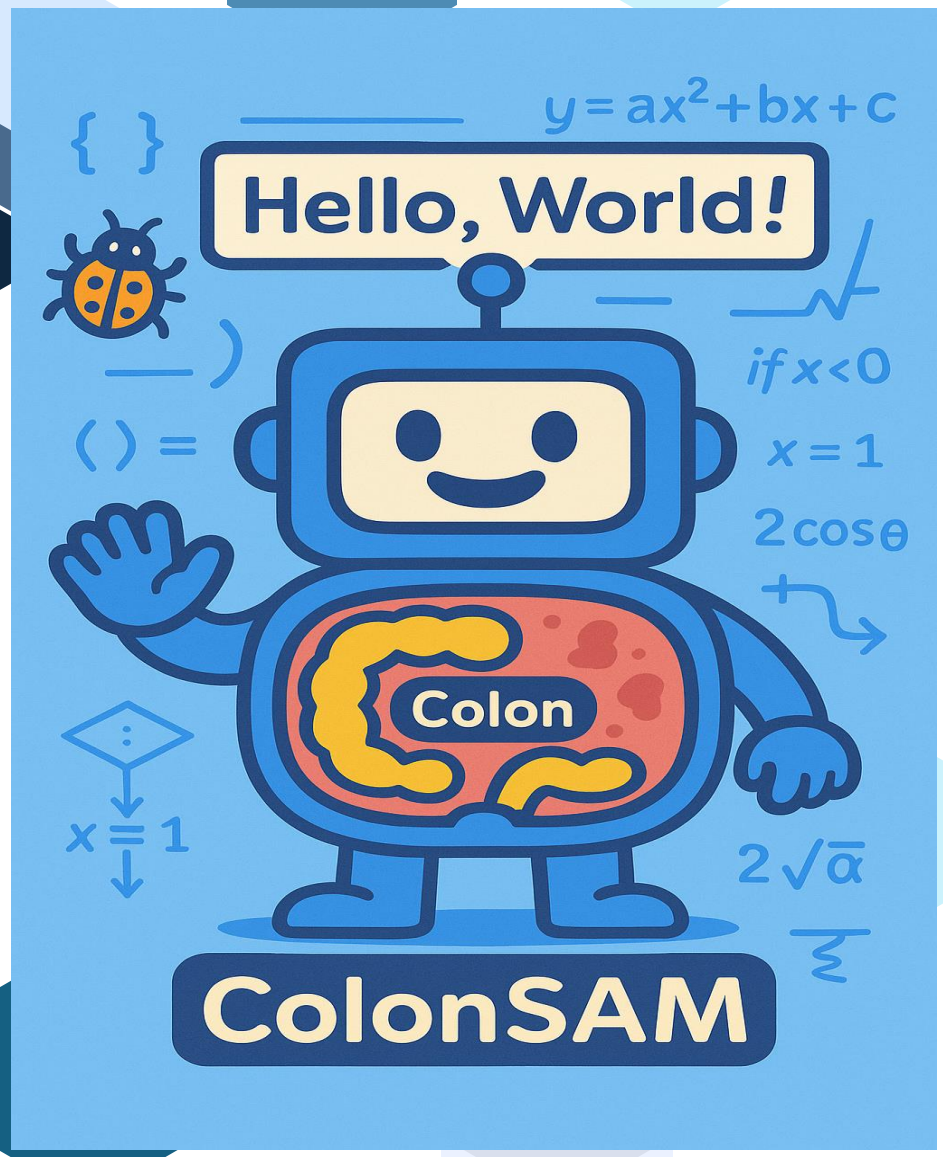
CRCV REU 2025

Week 3

Mentor: Dr. Tian
Student: Syn Nguyen



01. Project Overview

Goal:

Develop prompt free model to segment polyps

Why:

Colorectal cancer survival rate: 91% (stage I and II), 13% (stage IV)

How:

Auxiliary model and Semantic awareness

02

Approach

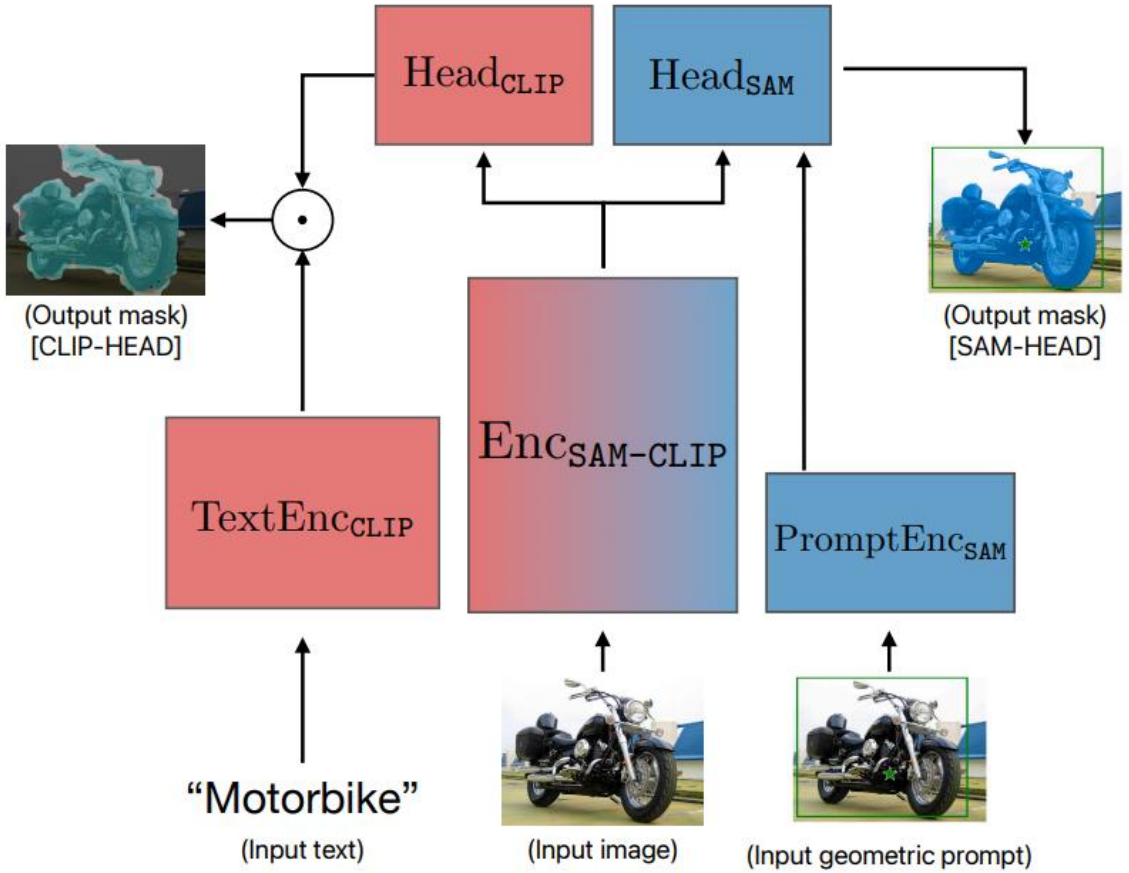


Auxiliary Model

Definition

Secondary model trained along side primary:

- Increase primary model's performance
- Similar to CLIP-SAM
  - SAM2 as backbone
  - Semantic model as auxiliary model



03

Two Part Plan



Two Part Plan

Fine-tuning

- Replicate results from MedSam 2
  - Zero-shot
  - Few-shot
- Fine-tune MedSam2 on SUN-SEG
- Benchmark Medsam2, SAM 2, and ColonSAM

Prompt Free

- Fine-tune auxiliary model
- Combine two models using some algorithms

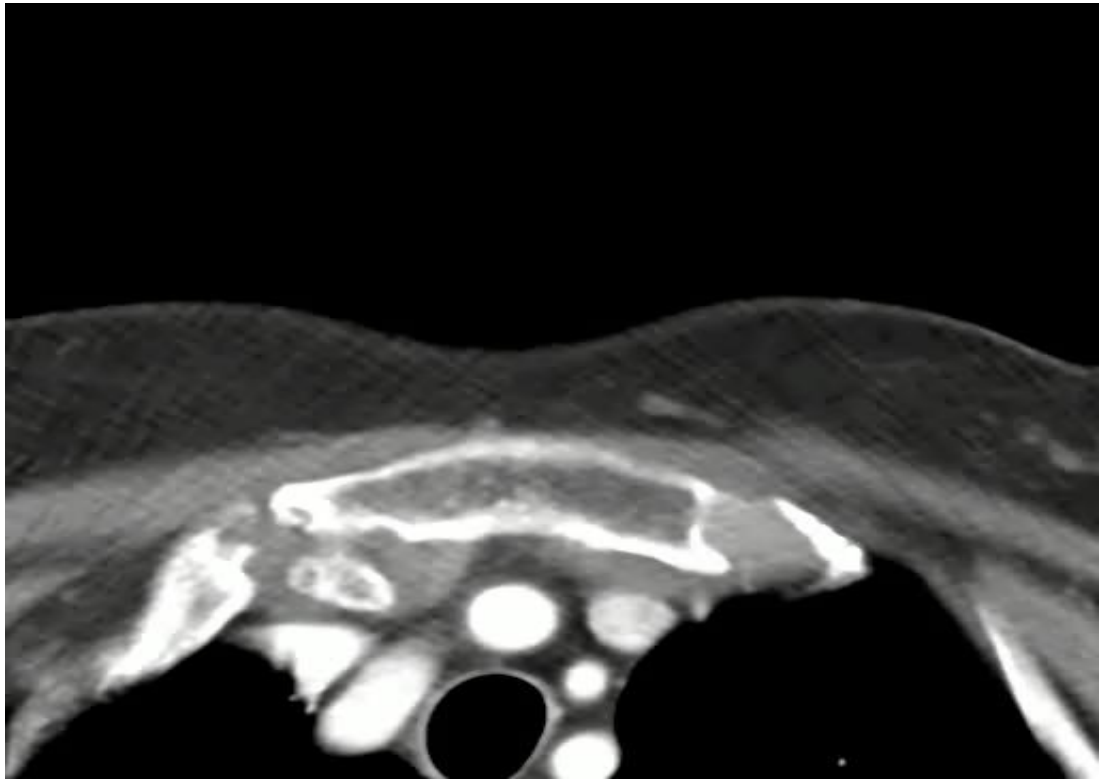
Part I: Fine-tuning

What have been done/ Challenge

- Set up code space 1
  - Poor maintenance
  - Limited documentation
- Set up code space 2 (main)

- Dataset SUN-SEG
  - Data preprocessing
  - Bounding box missing

- Inference with MedSam2
  - Detecting lesions in CT scan



03

Future Work



Weekly Plan

Week 1-2

- ☑ Read papers about SAM2, CLIP-SAM, MedSAM2
- ☑ Inference with MedSAM2
- ☐ Fine-tune and inference on SUN-SEG

Week 3-4

- ☐ Read papers about universal prompt free segmentation model
- ☐ Find auxiliary model
- ☐ Implement code and algorithm

Week 5-8

TBA

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THANK YOU!

