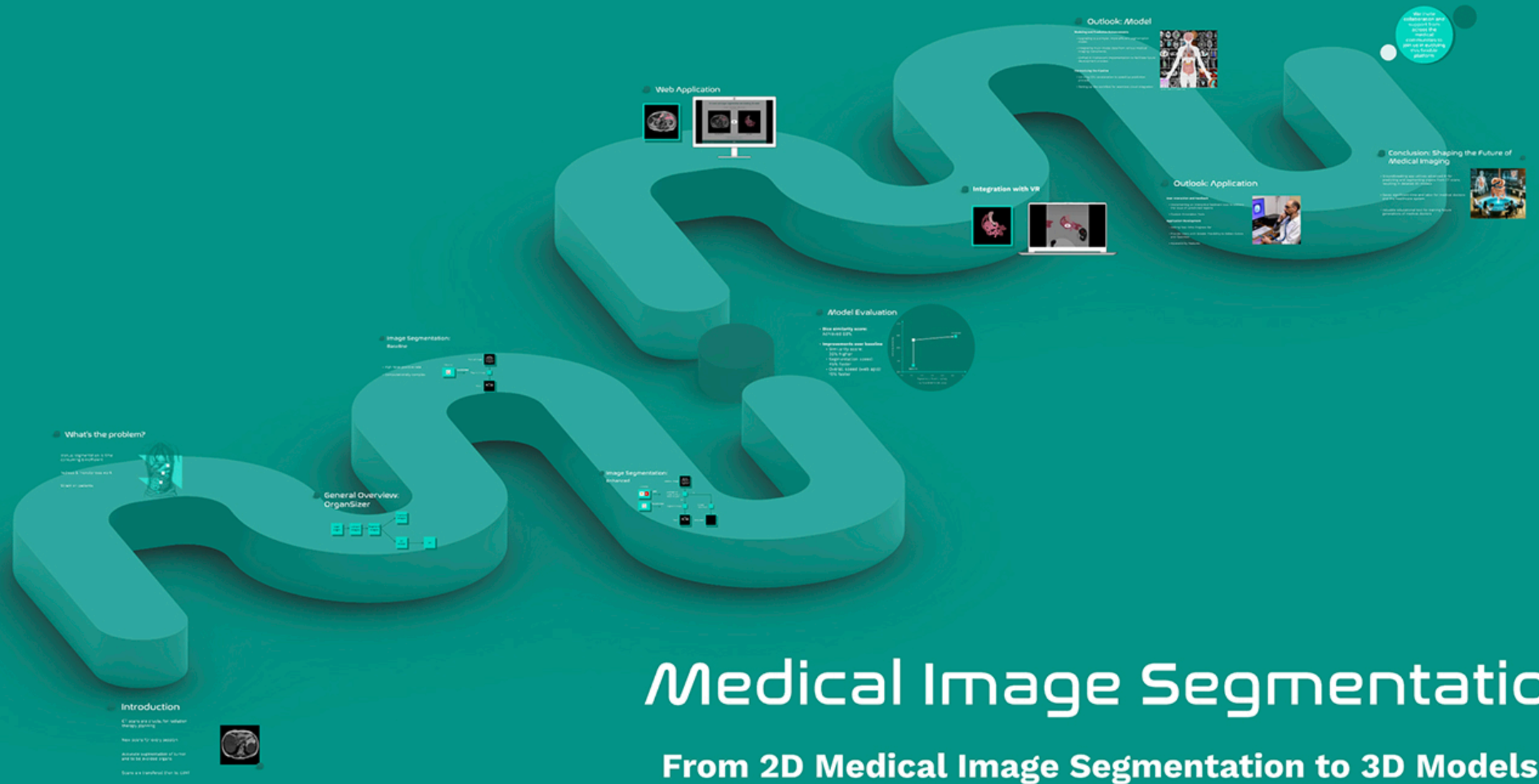


Medical Image Segmentation

From 2D Medical Image Segmentation to 3D Models

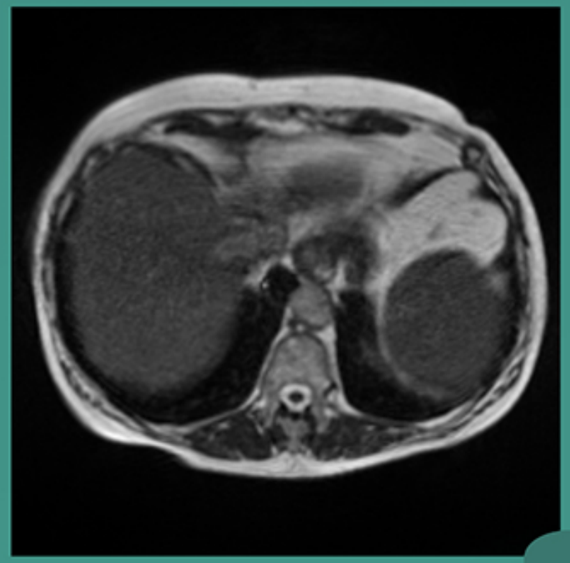
Introduction

CT scans are crucial for radiation therapy planning

New scans for every session

Accurate segmentation of tumor and to be avoided organs

Scans are transfered then to EBRT

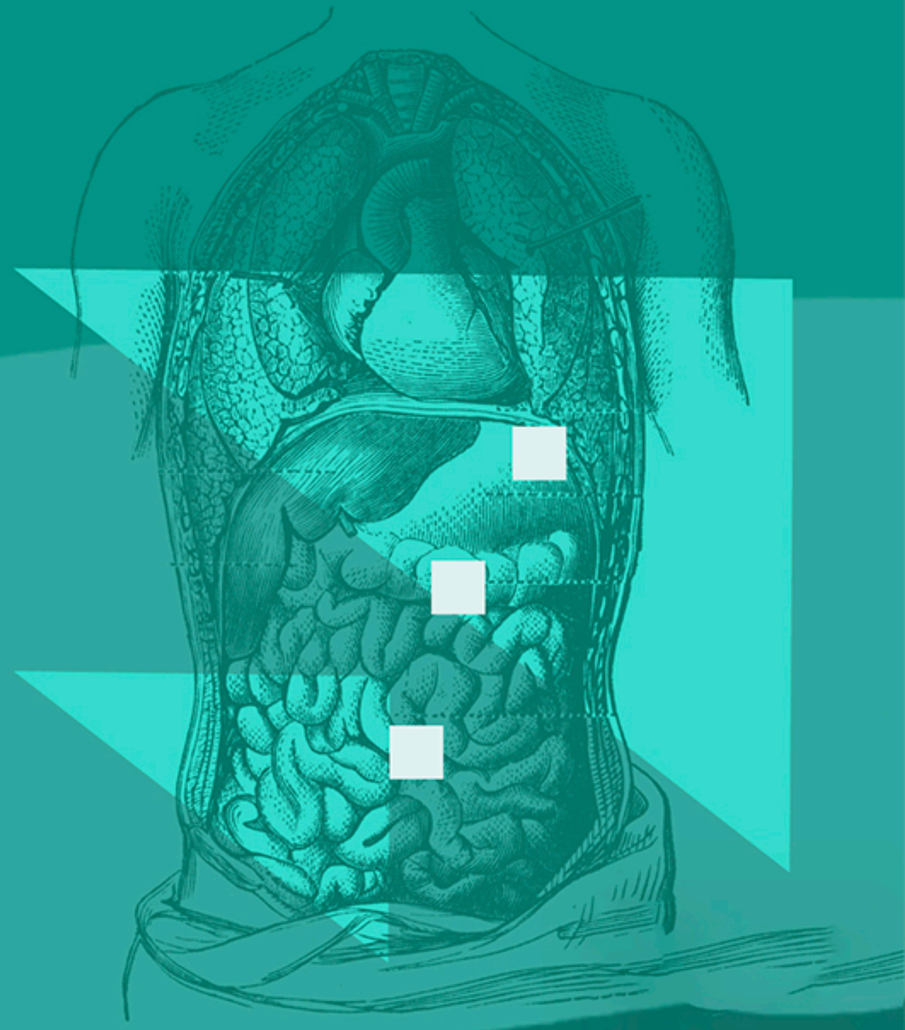


What's the problem?

Manual segmentation is time consuming & inefficient

Tedious & monotonous work

Strain on patients



General Overview: OrganSizer

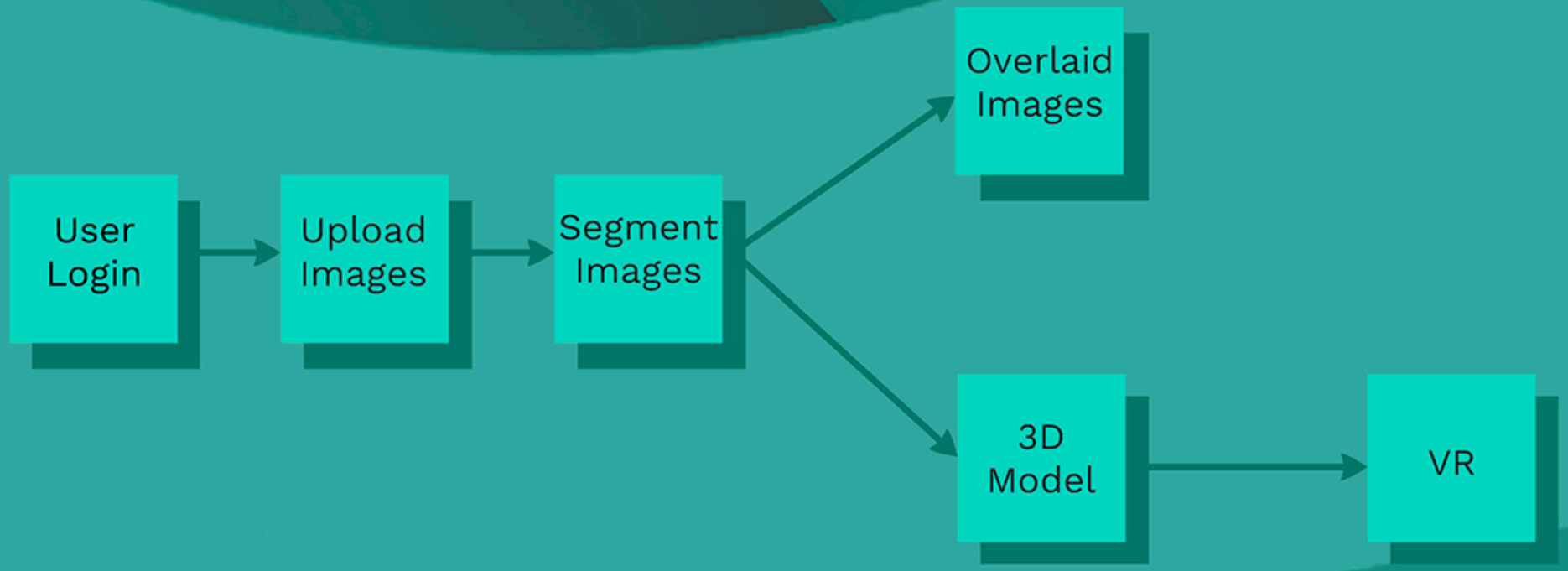


Image Segmentation:

Baseline

- High false positive rate
- Computationally complex

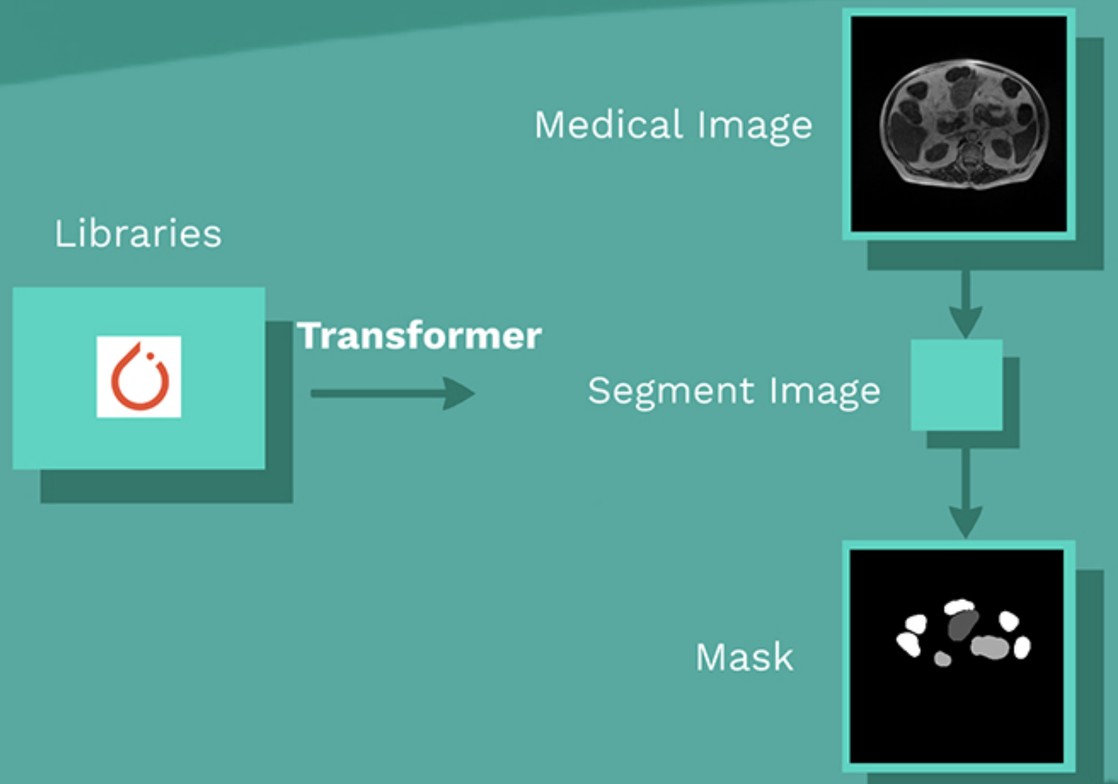
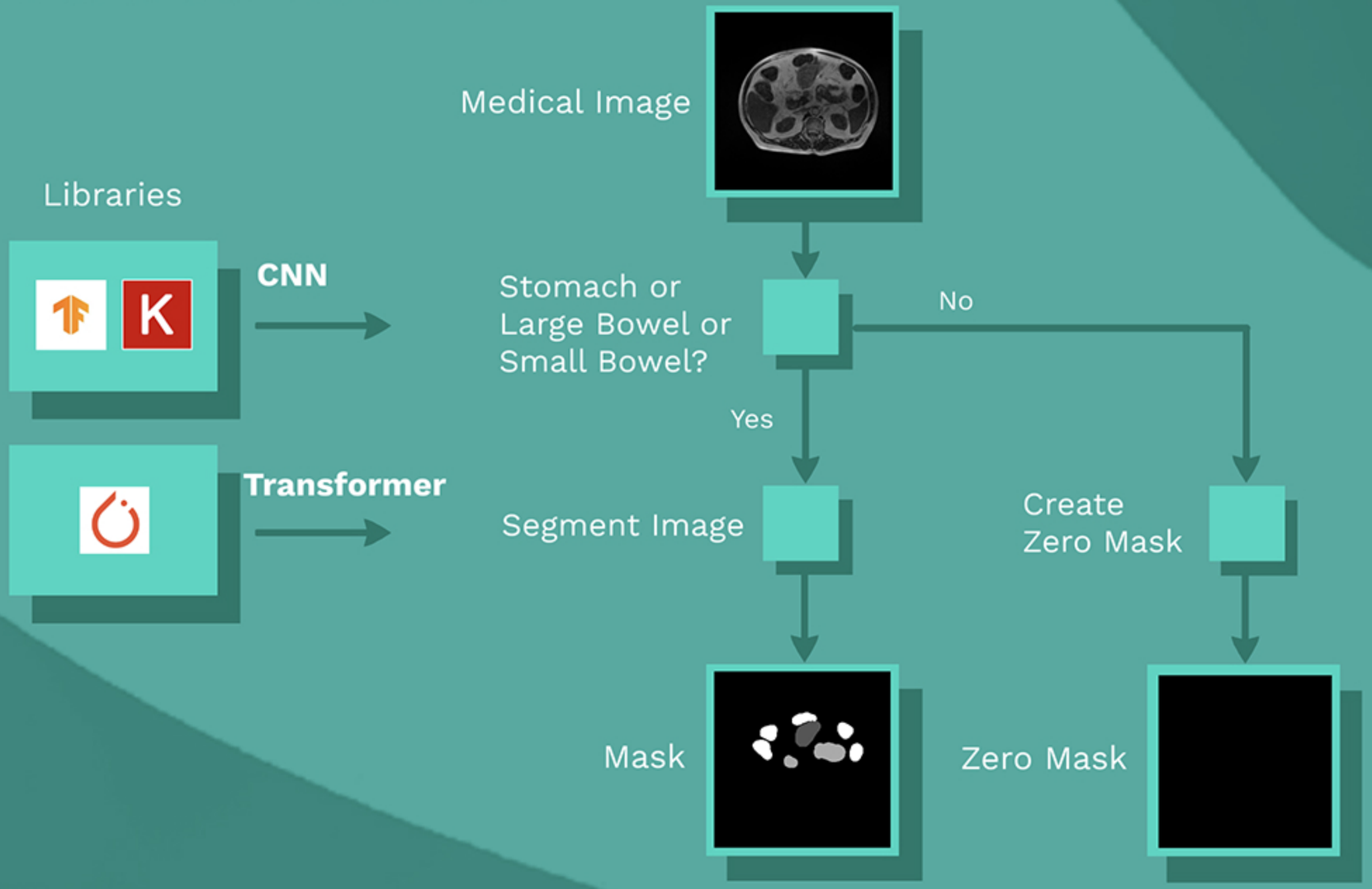


Image Segmentation:

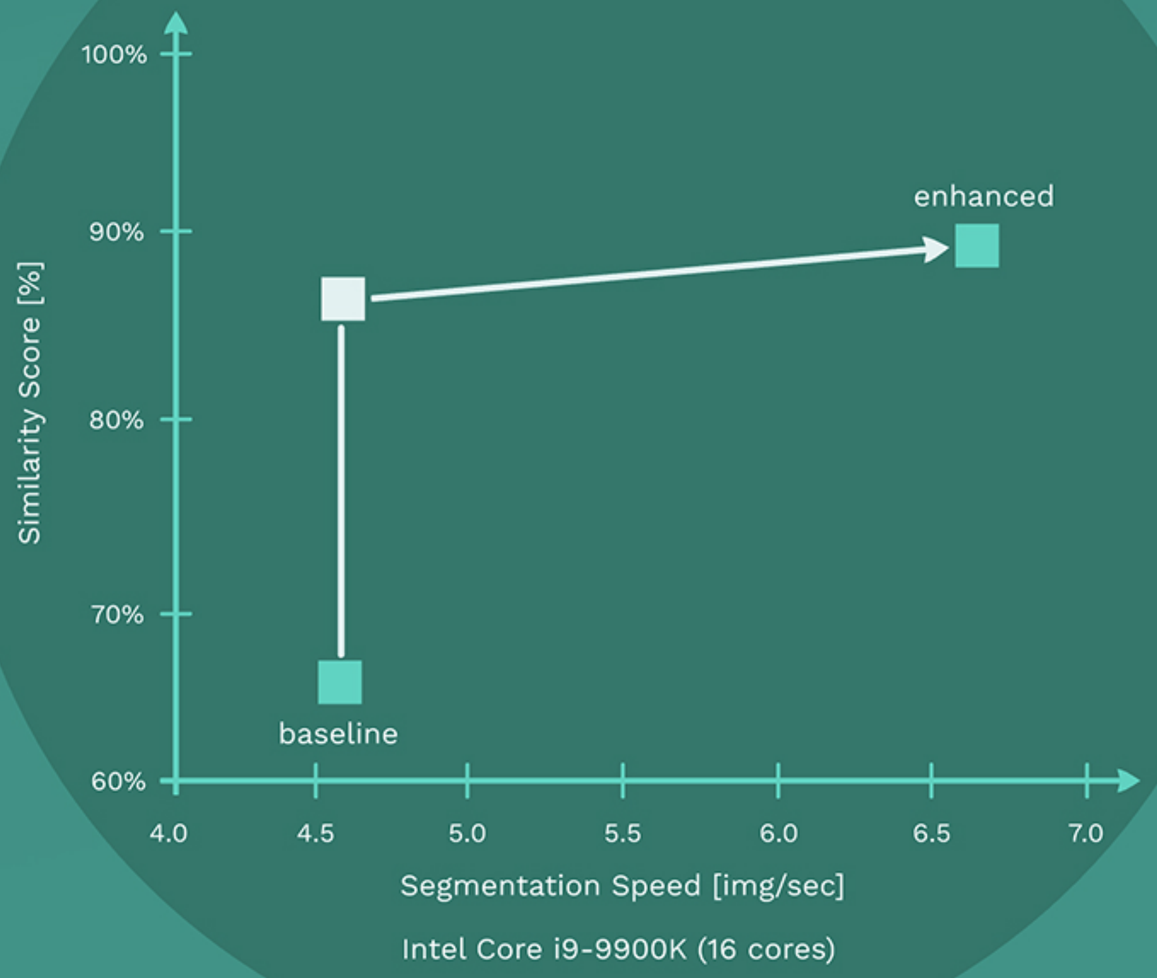
Enhanced



Model Evaluation

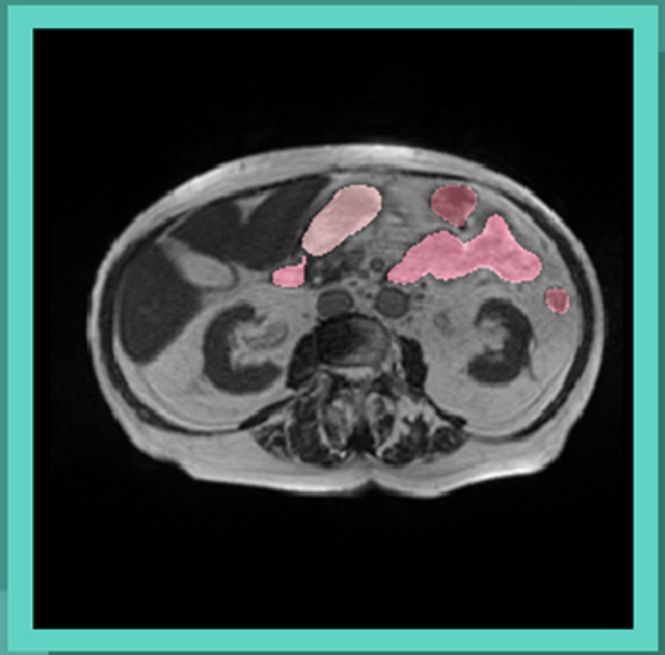
- **Dice similarity score:**
  Achieved 88%

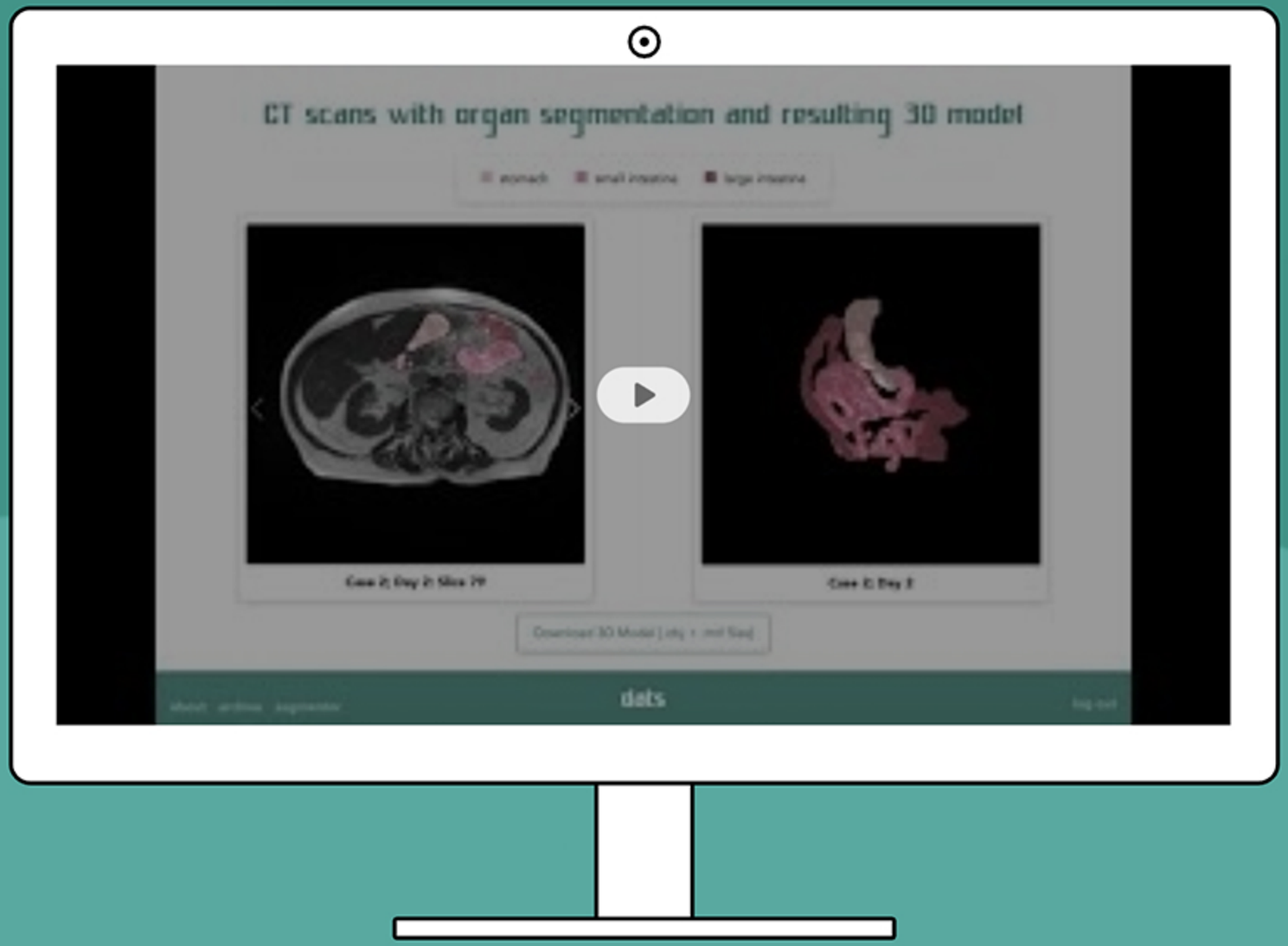
- **Improvements over baseline**
  - Similarity score:
    35% higher
  - Segmentation speed:
    45% faster
  - Overall speed (web app):
    15% faster



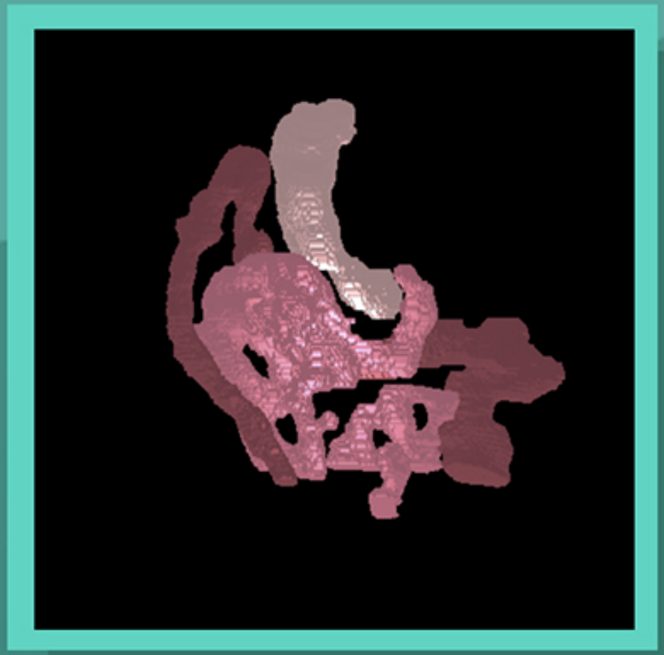
Web Application

[Please click below screen for video demonstration]

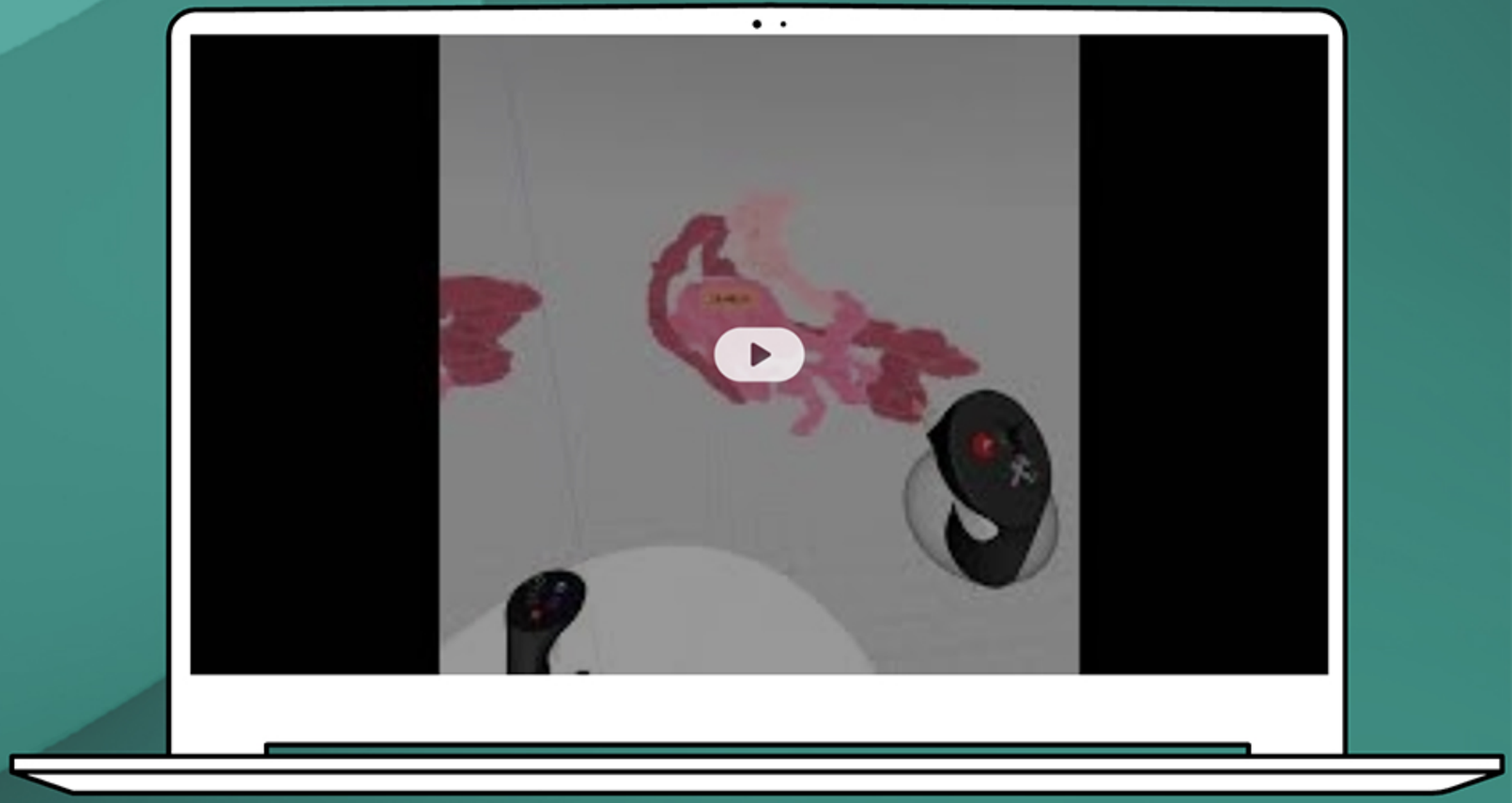




Integration with VR



[Please click below screen for video demonstration]



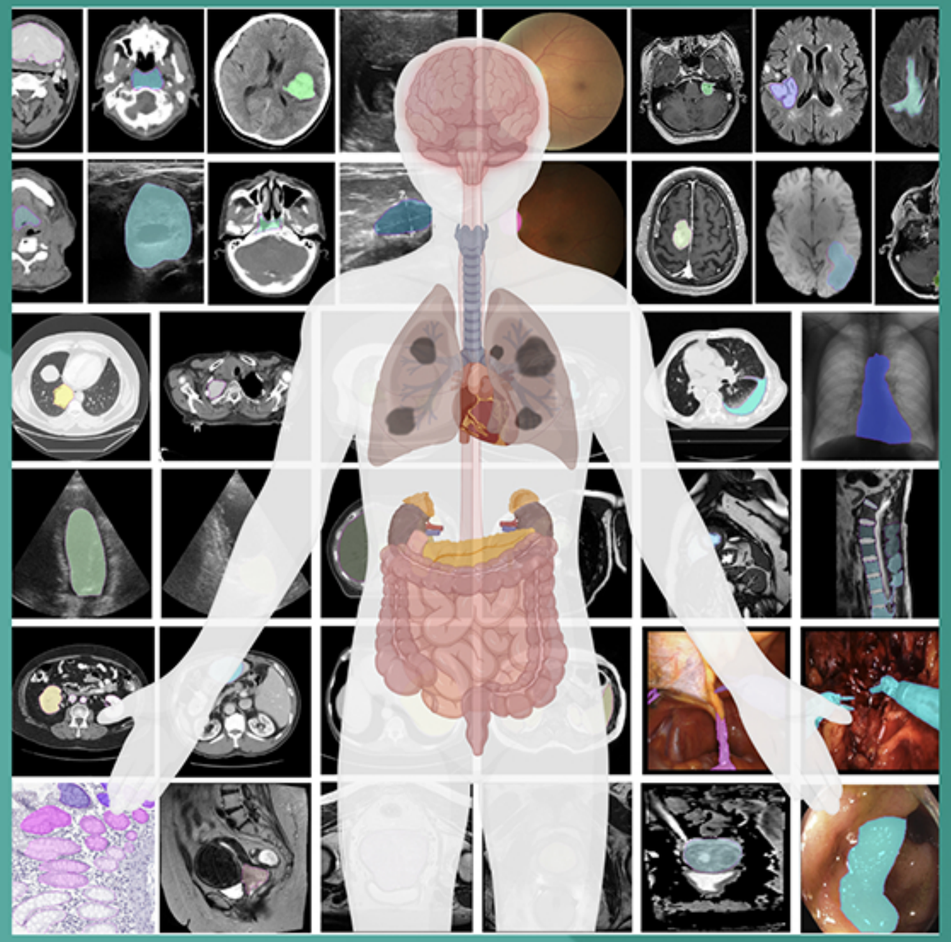
Outlook: Model

Modeling and Prediction Enhancements

- Upgrading to a simpler, more efficient segmentation model.
- Integrating multi-modal data from various medical imaging instruments.
- Unified AI Framework Implementation to facilitate future development process.

Harmonizing the Pipeline

- Utilizing GPU acceleration to speed up prediction process.
- Setting up the workflow for seamless cloud integration.



Segment anything in medical images

Outlook: Application

User Interaction and Feedback

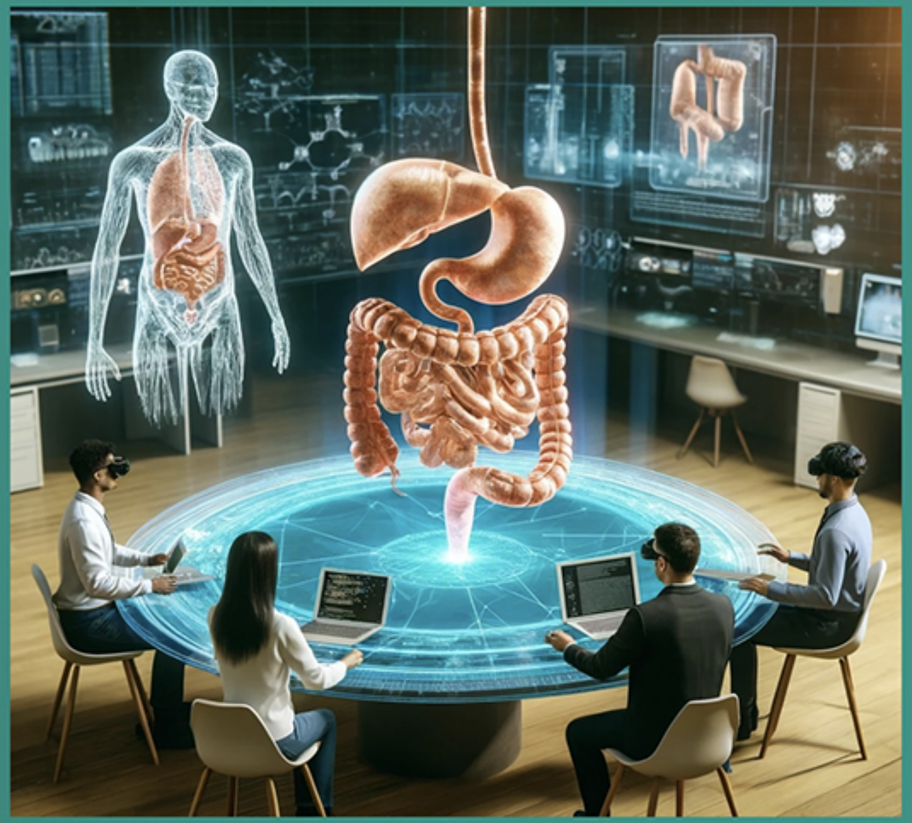
- Implementing an interactive feedback loop to address the issue of upredicted regions
- Custom Annotation Tools

Application Development

- Adding Real-time Progress Bar
- Provide Users with Greater Flexibility to Select Colors and Opacities
- Accessibility Features

Conclusion: Shaping the Future of Medical Imaging

- Groundbreaking app utilizes advanced AI for predicting and segmenting organs from CT scans, resulting in detailed 3D models
- Saves significant time and labor for medical doctors and the healthcare system
- Valuable educational tool for training future generations of medical doctors



We invite collaboration and support from across the medical communities to join us in evolving this flexible platform