

## Early stage pediatric Cardiovascular anomaly detection - ISU

# March Last Week 2025 Report

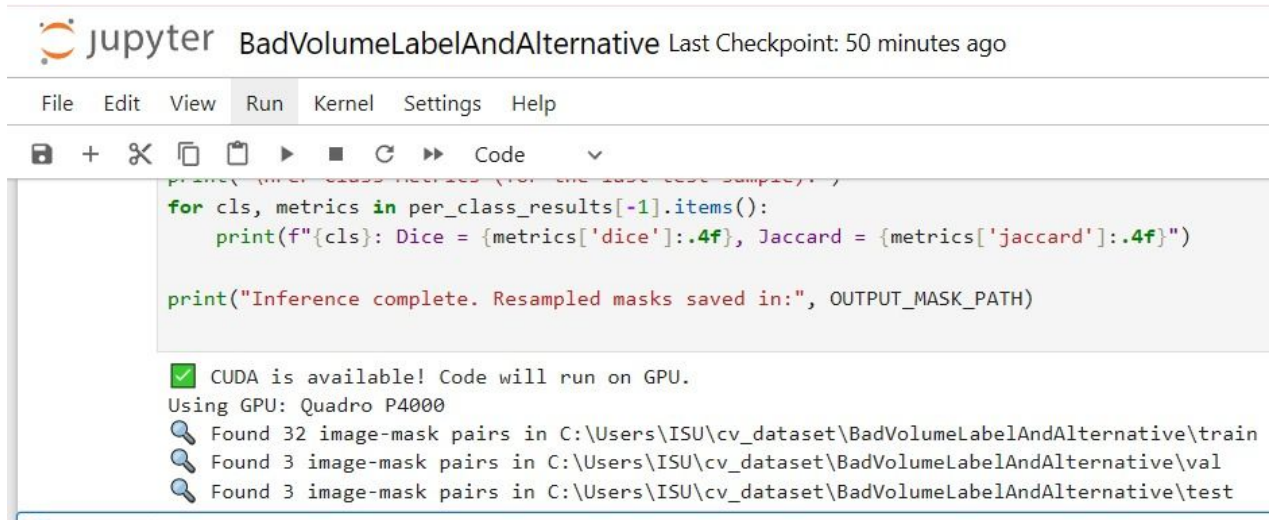
MUSAB AHMED KHAN UMAIR

2433275060

# This Week

- Trained the model on 5 different dataset combinations
- Ran 100 epochs on each dataset.
- Improved Evaluation Metrics as the model was able to detect other classes successfully.

- Implemented CUDA



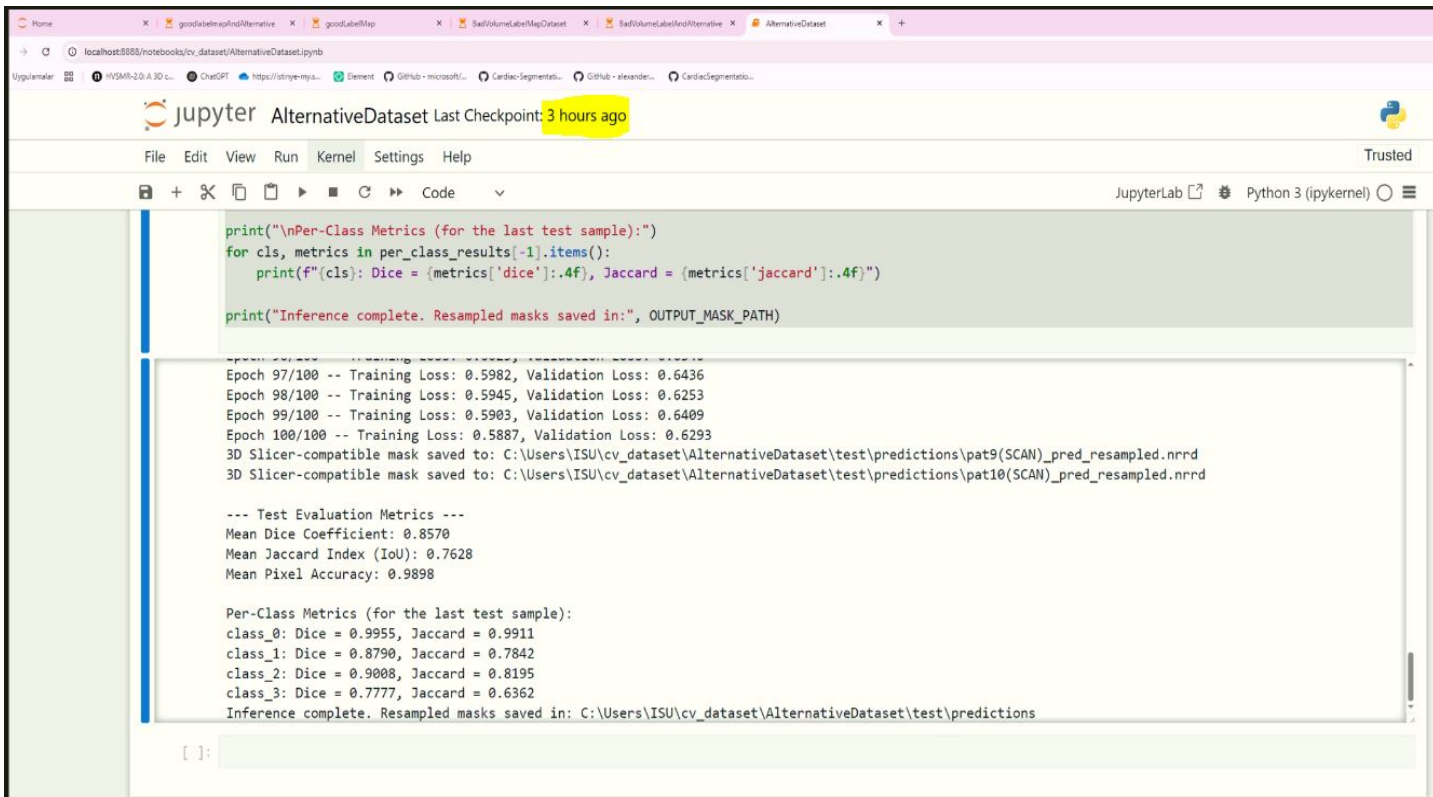
The screenshot shows a Jupyter Notebook window titled "BadVolumeLabelAndAlternative" with a status bar indicating "Last Checkpoint: 50 minutes ago". The interface includes a menu bar (File, Edit, View, Run, Kernel, Settings, Help) and a toolbar with icons for saving, adding, deleting, and running code. The code cell contains a loop that iterates over class metrics and prints the Dice and Jaccard indices for each class. The output shows a green checkmark indicating that CUDA is available and the code will run on the GPU (Quadro P4000). It also displays the number of image-mask pairs found in the training, validation, and test datasets.

```
for cls, metrics in per_class_results[-1].items():  
    print(f"{cls}: Dice = {metrics['dice']:.4f}, Jaccard = {metrics['jaccard']:.4f}")  
  
print("Inference complete. Resampled masks saved in:", OUTPUT_MASK_PATH)
```

✓ CUDA is available! Code will run on GPU.  
Using GPU: Quadro P4000  
Found 32 image-mask pairs in C:\Users\ISU\cv\_dataset\BadVolumeLabelAndAlternative\train  
Found 3 image-mask pairs in C:\Users\ISU\cv\_dataset\BadVolumeLabelAndAlternative\val  
Found 3 image-mask pairs in C:\Users\ISU\cv\_dataset\BadVolumeLabelAndAlternative\test

# CUDA

- It took 3 hours for 100 epochs (With 4 other model training running the same time)



The screenshot shows a JupyterLab window with a single tab titled 'AlternativeDataset Last Checkpoint: 3 hours ago'. The interface includes a top bar with the Jupyter logo and a menu bar with options: File, Edit, View, Run, Kernel, Settings, and Help. Below the menu bar is a toolbar with icons for file operations and execution. The main area displays a Python script and its output.

```
print("\nPer-Class Metrics (for the last test sample):")
for cls, metrics in per_class_results[-1].items():
    print(f"{cls}: Dice = {metrics['dice']:.4f}, Jaccard = {metrics['jaccard']:.4f}")

print("Inference complete. Resampled masks saved in:", OUTPUT_MASK_PATH)
```

Epoch 97/100 -- Training Loss: 0.5982, Validation Loss: 0.6436  
Epoch 98/100 -- Training Loss: 0.5945, Validation Loss: 0.6253  
Epoch 99/100 -- Training Loss: 0.5903, Validation Loss: 0.6409  
Epoch 100/100 -- Training Loss: 0.5887, Validation Loss: 0.6293  
3D Slicer-compatible mask saved to: C:\Users\ISU\cv\_dataset\AlternativeDataset\test\predictions\pat9(SCAN)\_pred\_resampled.nrrd  
3D Slicer-compatible mask saved to: C:\Users\ISU\cv\_dataset\AlternativeDataset\test\predictions\pat10(SCAN)\_pred\_resampled.nrrd

--- Test Evaluation Metrics ---  
Mean Dice Coefficient: 0.8570  
Mean Jaccard Index (IoU): 0.7628  
Mean Pixel Accuracy: 0.9898

Per-Class Metrics (for the last test sample):  
class\_0: Dice = 0.9955, Jaccard = 0.9911  
class\_1: Dice = 0.8790, Jaccard = 0.7842  
class\_2: Dice = 0.9008, Jaccard = 0.8195  
class\_3: Dice = 0.7777, Jaccard = 0.6362  
Inference complete. Resampled masks saved in: C:\Users\ISU\cv\_dataset\AlternativeDataset\test\predictions

# Dataset

## 5 Combination Of Datasets

Senol PISKIN, ISU > early\_pediatric > Masks

	Ad	Değiştir...	Değiştiren	Dosya boyutu
	Alternative Dataset <b>Open Source</b>	13 Mart	umarfaruksahin@o	36 öge
	CardiacSegmentationProject	25 Şubat	umarfaruksahin@o	1 öge
Good - NoErrors	<b>LABELMAP VOLUME MASKS</b>	4 Şubat	umarfaruksahin@o	26 öge
Bad - Errors	<u>VOLUME MAP MASKS</u>	4 Şubat	umarfaruksahin@o	26 öge

- ☐ AlternativeDataset
- ☐ BadVolumeLabelAndAlternative
- ☐ BadVolumeLabelMapDataset
- ☐ **goodLabelMap**
- ☐ goodlabelmapAndAlternative

# Volume Map Image - Problem

```
Checking files in: C:\Users\ISU\cv_dataset\mixDataset\train
No corrupted files found in train
```

```
Checking files in: C:\Users\ISU\cv_dataset\mixDataset\val
```

```
Error reading 'C:\Users\ISU\cv_dataset\mixDataset\val\images\IMAEH-2(SCAN).nrrd': buffer size must be a multiple of element size
```

```
Error reading 'C:\Users\ISU\cv_dataset\mixDataset\val\images\IMAEH-3(SCAN).nrrd': Size of the data does not equal the product of all the dimensions: 85458944-48908335=36550609
```

```
Found 2 corrupted file(s) in val:
```

- C:\Users\ISU\cv\_dataset\mixDataset\val\images\IMAEH-2(SCAN).nrrd: buffer size must be a multiple of element size
- C:\Users\ISU\cv\_dataset\mixDataset\val\images\IMAEH-3(SCAN).nrrd: Size of the data does not equal the product of all the dimensions: 85458944-48908335=36550609

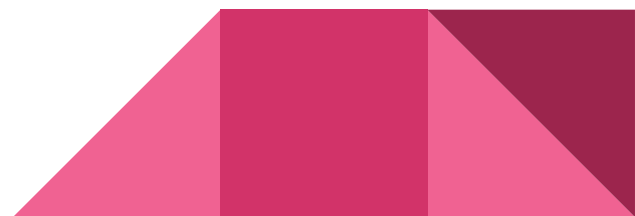
```
Checking files in: C:\Users\ISU\cv_dataset\mixDataset\test
```

```
Error reading 'C:\Users\ISU\cv_dataset\mixDataset\test\images\ACI-B-2(SCAN).nrrd': Size of the data does not equal the product of all the dimensions: 75497472-71588526=3908946
```

```
Error reading 'C:\Users\ISU\cv_dataset\mixDataset\test\images\IMAEH-7(SCAN).nrrd': buffer size must be a multiple of element size
```

```
Found 2 corrupted file(s) in test:
```

- C:\Users\ISU\cv\_dataset\mixDataset\test\images\ACI-B-2(SCAN).nrrd: Size of the data does not equal the product of all the dimensions: 75497472-71588526=3908946
- C:\Users\ISU\cv\_dataset\mixDataset\test\images\IMAEH-7(SCAN).nrrd: buffer size must be a multiple of element size



# Alternative Dataset Folder Structure

Training Folder: 12  
Images & Masks

Validation Folder: 2  
Images & Masks

Testing Folder: 2  
Images & Masks

```
train
├── .ipynb_checkpoints
├── images
│   ├── pat0(SCAN).nrrd
│   ├── pat1(SCAN).nrrd
│   ├── pat11(SCAN).nrrd
│   ├── pat12(SCAN).nrrd
│   ├── pat13(SCAN).nrrd
│   ├── pat14(SCAN).nrrd
│   ├── pat15(SCAN).nrrd
│   ├── pat2(SCAN).nrrd
│   ├── pat3(SCAN).nrrd
│   ├── pat4(SCAN).nrrd
│   ├── pat5(SCAN).nrrd
│   └── pat6(SCAN).nrrd
└── masks
    ├── .ipynb_checkpoints
    ├── pat0(MASK).nrrd
    ├── pat1(MASK).nrrd
    ├── pat11(MASK).nrrd
    ├── pat12(MASK).nrrd
    ├── pat13(MASK).nrrd
    ├── pat14(MASK).nrrd
    ├── pat15(MASK).nrrd
    ├── pat2(MASK).nrrd
    ├── pat3(MASK).nrrd
    ├── pat4(MASK).nrrd
    ├── pat5(MASK).nrrd
    └── pat6(MASK).nrrd
```

```
val
├── .ipynb_checkpoints
├── images
│   ├── pat7(SCAN).nrrd
│   └── pat8(SCAN).nrrd
├── masks
│   ├── .ipynb_checkpoints
│   ├── pat7(MASK).nrrd
│   └── pat8(MASK).nrrd
└── test
    ├── .ipynb_checkpoints
    ├── images
│   ├── pat10(SCAN).nrrd
│   └── pat9(SCAN).nrrd
    ├── masks
│   ├── pat10(MASK).nrrd
│   └── pat9(MASK).nrrd
    └── predictions
        ├── pat10(SCAN)_pred_resampled.nrrd
        └── pat9(SCAN)_pred_resampled.nrrd
```



# Good-LabelMap Volume

Training Folder: 18  
Images & Masks

Validation Folder: 7  
Images & Masks

Testing Folder: 3  
Images & Masks

```
train1
├── .ipynb_checkpoints
├── images
│   └── .ipynb_checkpoints
│       ├── GoodlabelmapAndAlternative-checkpoint.ipynb
│       ├── GoodlabelmapAndAlternative.ipynb
│       ├── MEDI-12(SCAN).nrrd
│       ├── MEDI-14(SCAN).nrrd
│       ├── MEDI-15(SCAN).nrrd
│       ├── MEDI-16(SCAN).nrrd
│       ├── MEDI-17(SCAN).nrrd
│       ├── MEDI-18(SCAN).nrrd
│       ├── MEDI-19(SCAN).nrrd
│       ├── MEDI-20(SCAN).nrrd
│       ├── MEDI-21(SCAN).nrrd
│       ├── MEDI-22(SCAN).nrrd
│       ├── MEDI-28(SCAN).nrrd
│       ├── MEDI-35(SCAN).nrrd
│       ├── MEDI-36(SCAN).nrrd
│       ├── MEDI-37(SCAN).nrrd
│       ├── MEDI-4(SCAN).nrrd
│       ├── MEDI-6(SCAN).nrrd
│       ├── MEDI-8(SCAN).nrrd
│       └── MEDI-9(SCAN).nrrd
└── masks
    ├── .ipynb_checkpoints
    ├── MEDI-12(MASK).nrrd
    ├── MEDI-14(MASK).nrrd
    ├── MEDI-15(MASK).nrrd
    ├── MEDI-16(MASK).nrrd
    ├── MEDI-17(MASK).nrrd
    ├── MEDI-18(MASK).nrrd
    ├── MEDI-19(MASK).nrrd
    ├── MEDI-20(MASK).nrrd
    ├── MEDI-21(MASK).nrrd
    ├── MEDI-22(MASK).nrrd
    ├── MEDI-28(MASK).nrrd
    ├── MEDI-35(MASK).nrrd
    ├── MEDI-36(MASK).nrrd
    ├── MEDI-37(MASK).nrrd
    ├── MEDI-4(MASK).nrrd
    ├── MEDI-6(MASK).nrrd
    ├── MEDI-8(MASK).nrrd
    └── MEDI-9(MASK).nrrd
```

```
val1
├── .ipynb_checkpoints
├── images
│   ├── ACI-B-5(SCAN).nrrd
│   ├── IMAEH-2(SCAN).nrrd
│   ├── IMAEH-3(SCAN).nrrd
│   ├── IMAEH-4(SCAN).nrrd
│   ├── IMAEH-7(SCAN).nrrd
│   ├── MEDI-10(SCAN).nrrd
│   └── MEDI-11(SCAN).nrrd
├── masks
│   ├── ACI-B-5(MASK).nrrd
│   ├── IMAEH-2(MASK).nrrd
│   ├── IMAEH-3(MASK).nrrd
│   ├── IMAEH-4(MASK).nrrd
│   ├── IMAEH-7(MASK).nrrd
│   ├── MEDI-10(MASK).nrrd
│   └── MEDI-11(MASK).nrrd
└── test1
    ├── .ipynb_checkpoints
    ├── images
    │   └── .ipynb_checkpoints
    │       ├── ACI-B-15(SCAN).nrrd
    │       ├── ACI-B-2(SCAN).nrrd
    │       └── IMAEH-1(SCAN).nrrd
    ├── masks
    │   ├── ACI-B-15(MASK).nrrd
    │   ├── ACI-B-2(MASK).nrrd
    │   └── IMAEH-1(MASK).nrrd
    └── predictions
        ├── .ipynb_checkpoints
        ├── ACI-B-15(SCAN)_pred_resampled.nrrd
        ├── ACI-B-2(SCAN)_pred_resampled.nrrd
        └── IMAEH-1(SCAN)_pred_resampled.nrrd
```

# Bad- Volume Map

Training Folder: 12  
Images & Masks

Validation Folder: 2  
Images & Masks

Testing Folder: 2  
Images & Masks

```
train
├── .ipynb_checkpoints
├── images
│   ├── pat0(SCAN).nrrd
│   ├── pat1(SCAN).nrrd
│   ├── pat11(SCAN).nrrd
│   ├── pat12(SCAN).nrrd
│   ├── pat13(SCAN).nrrd
│   ├── pat14(SCAN).nrrd
│   ├── pat15(SCAN).nrrd
│   ├── pat2(SCAN).nrrd
│   ├── pat3(SCAN).nrrd
│   ├── pat4(SCAN).nrrd
│   ├── pat5(SCAN).nrrd
│   └── pat6(SCAN).nrrd
└── masks
    ├── .ipynb_checkpoints
    ├── pat0(MASK).nrrd
    ├── pat1(MASK).nrrd
    ├── pat11(MASK).nrrd
    ├── pat12(MASK).nrrd
    ├── pat13(MASK).nrrd
    ├── pat14(MASK).nrrd
    ├── pat15(MASK).nrrd
    ├── pat2(MASK).nrrd
    ├── pat3(MASK).nrrd
    ├── pat4(MASK).nrrd
    ├── pat5(MASK).nrrd
    └── pat6(MASK).nrrd
```

```
val
├── .ipynb_checkpoints
├── images
│   ├── pat7(SCAN).nrrd
│   └── pat8(SCAN).nrrd
├── masks
│   ├── .ipynb_checkpoints
│   ├── pat7(MASK).nrrd
│   └── pat8(MASK).nrrd
└── test
    ├── .ipynb_checkpoints
    ├── images
│   ├── pat10(SCAN).nrrd
│   └── pat9(SCAN).nrrd
    ├── masks
│   ├── pat10(MASK).nrrd
│   └── pat9(MASK).nrrd
    └── predictions
        ├── pat10(SCAN)_pred_resampled.nrrd
        └── pat9(SCAN)_pred_resampled.nrrd
```



# Alternative + Good Dataset Folder Structure

Training Folder: 30  
Images & Masks

Validation Folder: 9  
Images & Masks

Testing Folder: 5  
Images & Masks

```
train1
├── .ipynb_checkpoints
├── images
│   ├── .ipynb_checkpoints
│   │   └── GoodlabelmapAndAlternative-checkpoint.ipynb
│   ├── GoodlabelmapAndAlternative.ipynb
│   ├── MED1-12(SCAN).nrrd
│   ├── MED1-14(SCAN).nrrd
│   ├── MED1-15(SCAN).nrrd
│   ├── MED1-16(SCAN).nrrd
│   ├── MED1-17(SCAN).nrrd
│   ├── MED1-18(SCAN).nrrd
│   ├── MED1-19(SCAN).nrrd
│   ├── MED1-20(SCAN).nrrd
│   ├── MED1-21(SCAN).nrrd
│   ├── MED1-22(SCAN).nrrd
│   ├── MED1-28(SCAN).nrrd
│   ├── MED1-35(SCAN).nrrd
│   ├── MED1-36(SCAN).nrrd
│   ├── MED1-37(SCAN).nrrd
│   ├── MED1-4(SCAN).nrrd
│   ├── MED1-6(SCAN).nrrd
│   ├── MED1-8(SCAN).nrrd
│   ├── MED1-9(SCAN).nrrd
│   ├── pat0(SCAN).nrrd
│   ├── pat1(SCAN).nrrd
│   ├── pat11(SCAN).nrrd
│   ├── pat12(SCAN).nrrd
│   ├── pat13(SCAN).nrrd
│   ├── pat14(SCAN).nrrd
│   ├── pat15(SCAN).nrrd
│   ├── pat2(SCAN).nrrd
│   ├── pat3(SCAN).nrrd
│   ├── pat4(SCAN).nrrd
│   ├── pat5(SCAN).nrrd
│   └── pat6(SCAN).nrrd
└── masks
    ├── .ipynb_checkpoints
    │   └── MED1-12(MASK).nrrd
    │   └── MED1-14(MASK).nrrd
    │   └── MED1-15(MASK).nrrd
    │   └── MED1-16(MASK).nrrd
    │   └── MED1-17(MASK).nrrd
    │   └── MED1-18(MASK).nrrd
    │   └── MED1-19(MASK).nrrd
    │   └── MED1-20(MASK).nrrd
    │   └── MED1-21(MASK).nrrd
    │   └── MED1-22(MASK).nrrd
    │   └── MED1-28(MASK).nrrd
    │   └── MED1-35(MASK).nrrd
    │   └── MED1-36(MASK).nrrd
    │   └── MED1-37(MASK).nrrd
    │   └── MED1-4(MASK).nrrd
    │   └── MED1-6(MASK).nrrd
    │   └── MED1-8(MASK).nrrd
    │   └── MED1-9(MASK).nrrd
    │   └── pat0(MASK).nrrd
    │   └── pat1(MASK).nrrd
    │   └── pat11(MASK).nrrd
    │   └── pat12(MASK).nrrd
    │   └── pat13(MASK).nrrd
    │   └── pat14(MASK).nrrd
    │   └── pat15(MASK).nrrd
    │   └── pat2(MASK).nrrd
    │   └── pat3(MASK).nrrd
    │   └── pat4(MASK).nrrd
    │   └── pat5(MASK).nrrd
    │   └── pat6(MASK).nrrd
```

```
val1
├── .ipynb_checkpoints
├── images
│   ├── ACI-B-5(SCAN).nrrd
│   ├── IMAEH-2(SCAN).nrrd
│   ├── IMAEH-3(SCAN).nrrd
│   ├── IMAEH-4(SCAN).nrrd
│   ├── IMAEH-7(SCAN).nrrd
│   ├── MED1-10(SCAN).nrrd
│   ├── MED1-11(SCAN).nrrd
│   ├── pat7(SCAN).nrrd
│   └── pat8(SCAN).nrrd
└── masks
    ├── ACI-B-5(MASK).nrrd
    ├── IMAEH-2(MASK).nrrd
    ├── IMAEH-3(MASK).nrrd
    ├── IMAEH-4(MASK).nrrd
    ├── IMAEH-7(MASK).nrrd
    ├── MED1-10(MASK).nrrd
    ├── MED1-11(MASK).nrrd
    ├── pat7(MASK).nrrd
    └── pat8(MASK).nrrd

test1
├── .ipynb_checkpoints
├── images
│   ├── .ipynb_checkpoints
│   │   ├── ACI-B-15(SCAN).nrrd
│   │   ├── ACI-B-2(SCAN).nrrd
│   │   ├── IMAEH-1(SCAN).nrrd
│   │   ├── pat10(SCAN).nrrd
│   │   └── pat9(SCAN).nrrd
└── masks
    ├── ACI-B-15(MASK).nrrd
    ├── ACI-B-2(MASK).nrrd
    ├── IMAEH-1(MASK).nrrd
    ├── pat10(MASK).nrrd
    └── pat9(MASK).nrrd

predictions
├── .ipynb_checkpoints
│   ├── ACI-B-15(SCAN)_pred_resampled.nrrd
│   ├── ACI-B-2(SCAN)_pred_resampled.nrrd
│   ├── IMAEH-1(SCAN)_pred_resampled.nrrd
│   ├── pat10(SCAN)_pred_resampled.nrrd
│   └── pat9(SCAN)_pred_resampled.nrrd
```

# Alternative + Bad Dataset Folder Structure

Training Folder: 32  
Images & Masks

Validation Folder: 3  
Images & Masks

Testing Folder: 3 Images  
& Masks

```
train
├── .ipynb_checkpoints
├── images
│   ├── .ipynb_checkpoints
│   ├── MEDI-10(SCAN).nrrd
│   ├── MEDI-11(SCAN).nrrd
│   ├── MEDI-12(SCAN).nrrd
│   ├── MEDI-14(SCAN).nrrd
│   ├── MEDI-15(SCAN).nrrd
│   ├── MEDI-16(SCAN).nrrd
│   ├── MEDI-17(SCAN).nrrd
│   ├── MEDI-18(SCAN).nrrd
│   ├── MEDI-19(SCAN).nrrd
│   ├── MEDI-20(SCAN).nrrd
│   ├── MEDI-21(SCAN).nrrd
│   ├── MEDI-22(SCAN).nrrd
│   ├── MEDI-28(SCAN).nrrd
│   ├── MEDI-35(SCAN).nrrd
│   ├── MEDI-36(SCAN).nrrd
│   ├── MEDI-37(SCAN).nrrd
│   ├── MEDI-4(SCAN).nrrd
│   ├── MEDI-6(SCAN).nrrd
│   ├── MEDI-8(SCAN).nrrd
│   ├── MEDI-9(SCAN).nrrd
│   ├── pat0(SCAN).nrrd
│   ├── pat1(SCAN).nrrd
│   ├── pat11(SCAN).nrrd
│   ├── pat12(SCAN).nrrd
│   ├── pat13(SCAN).nrrd
│   ├── pat14(SCAN).nrrd
│   ├── pat15(SCAN).nrrd
│   ├── pat2(SCAN).nrrd
│   ├── pat3(SCAN).nrrd
│   ├── pat4(SCAN).nrrd
│   ├── pat5(SCAN).nrrd
│   └── pat6(SCAN).nrrd
└── masks
    ├── .ipynb_checkpoints
    ├── MEDI-10(MASK).nrrd
    ├── MEDI-11(MASK).nrrd
    ├── MEDI-12(MASK).nrrd
    ├── MEDI-14(MASK).nrrd
    ├── MEDI-15(MASK).nrrd
    ├── MEDI-16(MASK).nrrd
    ├── MEDI-17(MASK).nrrd
    ├── MEDI-18(MASK).nrrd
    ├── MEDI-19(MASK).nrrd
    ├── MEDI-20(MASK).nrrd
    ├── MEDI-21(MASK).nrrd
    ├── MEDI-22(MASK).nrrd
    ├── MEDI-28(MASK).nrrd
    ├── MEDI-35(MASK).nrrd
    ├── MEDI-36(MASK).nrrd
    ├── MEDI-37(MASK).nrrd
    ├── MEDI-4(MASK).nrrd
    ├── MEDI-6(MASK).nrrd
    ├── MEDI-8(MASK).nrrd
    ├── MEDI-9(MASK).nrrd
    ├── pat0(MASK).nrrd
    ├── pat1(MASK).nrrd
    ├── pat11(MASK).nrrd
    ├── pat12(MASK).nrrd
    ├── pat13(MASK).nrrd
    ├── pat14(MASK).nrrd
    ├── pat15(MASK).nrrd
    ├── pat2(MASK).nrrd
    ├── pat3(MASK).nrrd
    ├── pat4(MASK).nrrd
    ├── pat5(MASK).nrrd
    └── pat6(MASK).nrrd
```

```
val
├── .ipynb_checkpoints
├── images
│   ├── .ipynb_checkpoints
│   ├── IMAEH-1(SCAN).nrrd
│   ├── pat7(SCAN).nrrd
│   └── pat8(SCAN).nrrd
├── masks
│   ├── .ipynb_checkpoints
│   ├── IMAEH-1(MASK).nrrd
│   ├── pat7(MASK).nrrd
│   └── pat8(MASK).nrrd
└── test
    ├── .ipynb_checkpoints
    ├── images
    │   ├── .ipynb_checkpoints
    │   ├── IMAEH-4(SCAN).nrrd
    │   ├── pat10(SCAN).nrrd
    │   └── pat9(SCAN).nrrd
    ├── masks
    │   ├── .ipynb_checkpoints
    │   ├── IMAEH-4(MASK).nrrd
    │   ├── pat10(MASK).nrrd
    │   └── pat9(MASK).nrrd
    └── predictions
        ├── IMAEH-4(SCAN)_pred_resampled.nrrd
        ├── pat10(SCAN)_pred_resampled.nrrd
        └── pat9(SCAN)_pred_resampled.nrrd
```

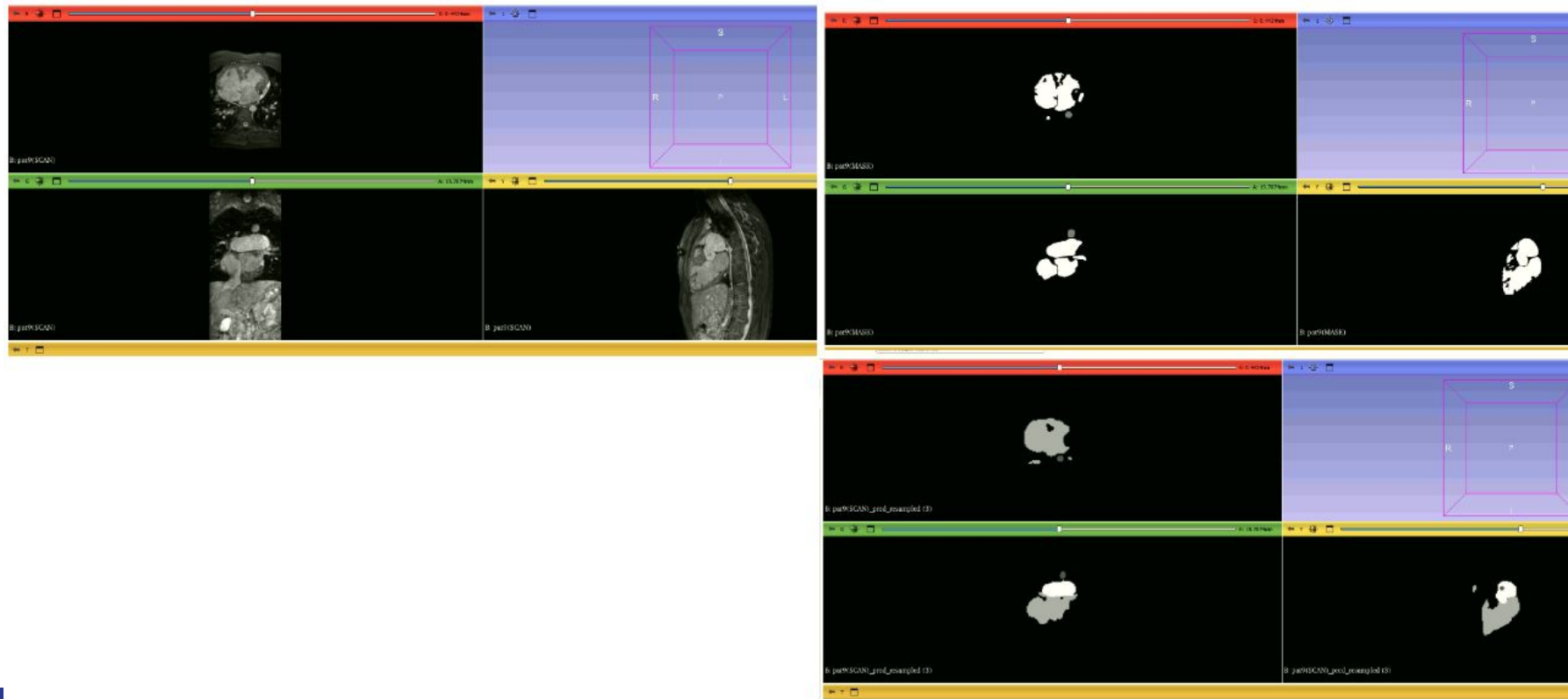
# Alternative Dataset

```
Epoch 84/100 -- Training Loss: 0.6469, Validation Loss: 0.6753
Epoch 85/100 -- Training Loss: 0.6441, Validation Loss: 0.6746
Epoch 86/100 -- Training Loss: 0.6398, Validation Loss: 0.6612
Epoch 87/100 -- Training Loss: 0.6365, Validation Loss: 0.6800
Epoch 88/100 -- Training Loss: 0.6323, Validation Loss: 0.6644
Epoch 89/100 -- Training Loss: 0.6285, Validation Loss: 0.6656
Epoch 90/100 -- Training Loss: 0.6248, Validation Loss: 0.6584
Epoch 91/100 -- Training Loss: 0.6216, Validation Loss: 0.6539
Epoch 92/100 -- Training Loss: 0.6176, Validation Loss: 0.6560
Epoch 93/100 -- Training Loss: 0.6144, Validation Loss: 0.6535
Epoch 94/100 -- Training Loss: 0.6112, Validation Loss: 0.6324
Epoch 95/100 -- Training Loss: 0.6073, Validation Loss: 0.6495
Epoch 96/100 -- Training Loss: 0.6025, Validation Loss: 0.6340
Epoch 97/100 -- Training Loss: 0.5982, Validation Loss: 0.6436
Epoch 98/100 -- Training Loss: 0.5945, Validation Loss: 0.6253
Epoch 99/100 -- Training Loss: 0.5903, Validation Loss: 0.6409
Epoch 100/100 -- Training Loss: 0.5887, Validation Loss: 0.6293
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\AlternativeDataset\test\predictions\pat9(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\AlternativeDataset\test\predictions\pat10(SCAN)_pred_resampled.nrrd

--- Test Evaluation Metrics ---
Mean Dice Coefficient: 0.8570
Mean Jaccard Index (IoU): 0.7628
Mean Pixel Accuracy: 0.9898

Per-Class Metrics (for the last test sample):
class_0: Dice = 0.9955, Jaccard = 0.9911
class_1: Dice = 0.8790, Jaccard = 0.7842
class_2: Dice = 0.9008, Jaccard = 0.8195
class_3: Dice = 0.7777, Jaccard = 0.6362
Inference complete. Resampled masks saved in: C:\Users\ISU\cv_dataset\AlternativeDataset\test\predictions
```

# Alternative Dataset - Predicted Mask



# Good Label Mask Dataset - Predicted Mask

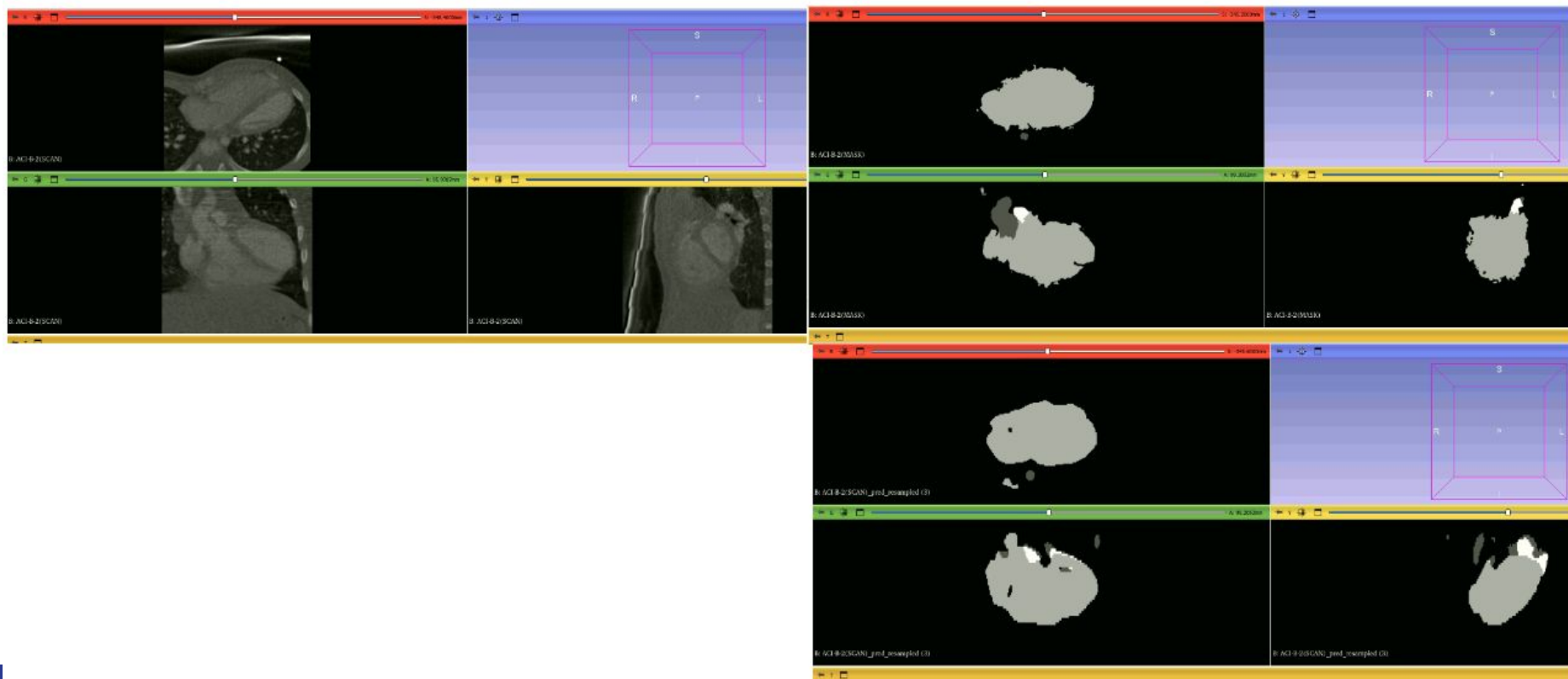
```
Epoch 88/100 -- Training Loss: 0.6855, Validation Loss: 0.7741
Epoch 89/100 -- Training Loss: 0.6825, Validation Loss: 0.7613
Epoch 90/100 -- Training Loss: 0.6794, Validation Loss: 0.7627
Epoch 91/100 -- Training Loss: 0.6773, Validation Loss: 0.7673
Epoch 92/100 -- Training Loss: 0.6739, Validation Loss: 0.7617
Epoch 93/100 -- Training Loss: 0.6713, Validation Loss: 0.7538
Epoch 94/100 -- Training Loss: 0.6691, Validation Loss: 0.7563
Epoch 95/100 -- Training Loss: 0.6660, Validation Loss: 0.7561
Epoch 96/100 -- Training Loss: 0.6635, Validation Loss: 0.7486
Epoch 97/100 -- Training Loss: 0.6609, Validation Loss: 0.7511
Epoch 98/100 -- Training Loss: 0.6573, Validation Loss: 0.7575
Epoch 99/100 -- Training Loss: 0.6543, Validation Loss: 0.7528
Epoch 100/100 -- Training Loss: 0.6509, Validation Loss: 0.7471
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\goodLabelMap\test1\predictions\ACI-B-2(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\goodLabelMap\test1\predictions\ACI-B-15(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\goodLabelMap\test1\predictions\IMAEH-1(SCAN)_pred_resampled.nrrd

--- Test Evaluation Metrics ---
Mean Dice Coefficient: 0.4994
Mean Jaccard Index (IoU): 0.4236
Mean Pixel Accuracy: 0.9610

Per-Class Metrics (for the last test sample):
class_0: Dice = 0.9844, Jaccard = 0.9693
class_1: Dice = 0.0000, Jaccard = 0.0000
class_2: Dice = 0.2564, Jaccard = 0.1471
class_3: Dice = 0.0000, Jaccard = 0.0000
Inference complete. Resampled masks saved in: C:\Users\ISU\cv_dataset\goodLabelMap\test1\predictions
```



# Good Label Mask Dataset - Predicted Mask





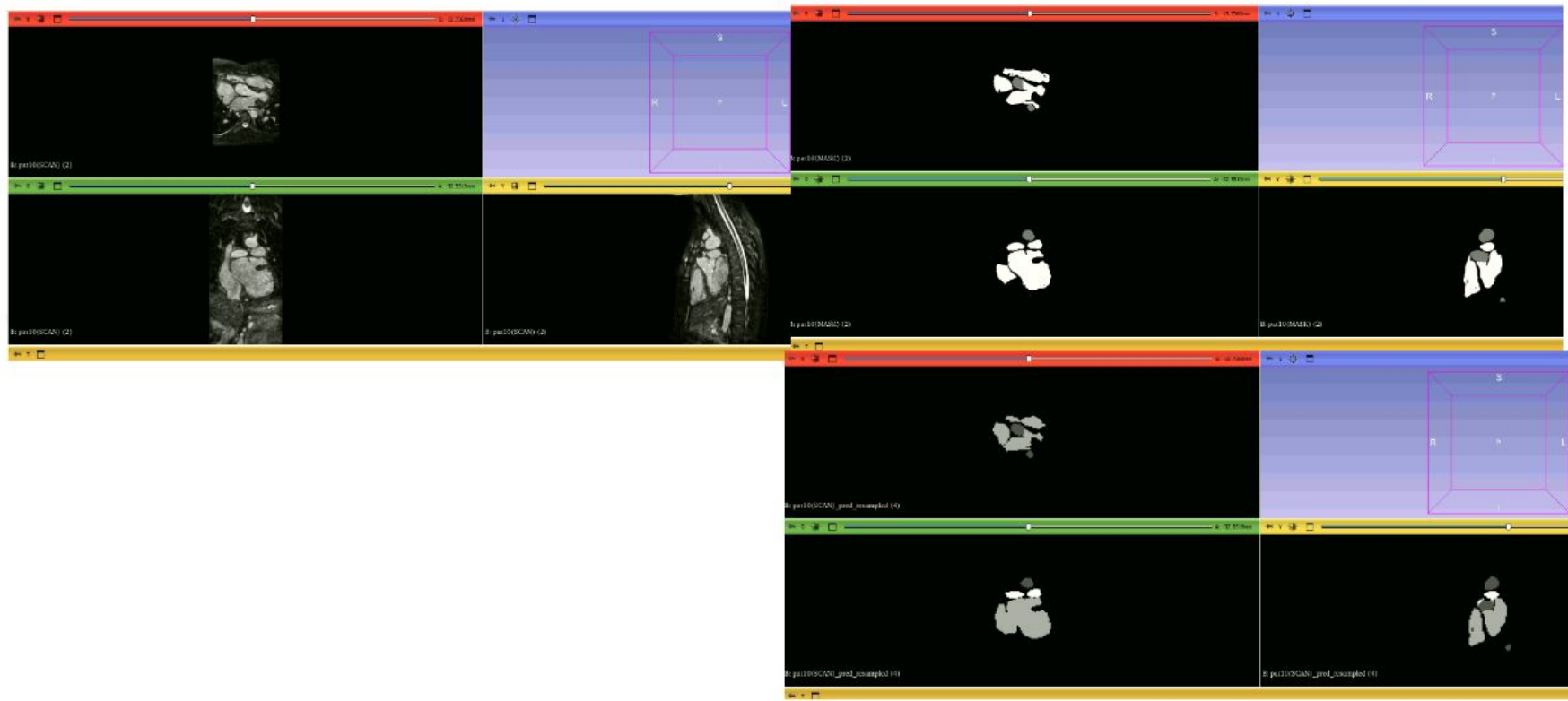
# Good & Alternative Dataset - Predicted Mask

```
Epoch 92/100 -- Training Loss: 0.2836, Validation Loss: 0.5971
Epoch 93/100 -- Training Loss: 0.2712, Validation Loss: 0.5560
Epoch 94/100 -- Training Loss: 0.2648, Validation Loss: 0.5899
Epoch 95/100 -- Training Loss: 0.2553, Validation Loss: 0.5566
Epoch 96/100 -- Training Loss: 0.2465, Validation Loss: 0.5557
Epoch 97/100 -- Training Loss: 0.2413, Validation Loss: 0.5476
Epoch 98/100 -- Training Loss: 0.2352, Validation Loss: 0.5426
Epoch 99/100 -- Training Loss: 0.2306, Validation Loss: 0.5393
Epoch 100/100 -- Training Loss: 0.2284, Validation Loss: 0.5523
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\goodlabelmapAndAlternative\test1\predictions\ACI-B-15(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\goodlabelmapAndAlternative\test1\predictions\IMAEH-1(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\goodlabelmapAndAlternative\test1\predictions\pat10(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\goodlabelmapAndAlternative\test1\predictions\ACI-B-2(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\goodlabelmapAndAlternative\test1\predictions\pat9(SCAN)_pred_resampled.nrrd

--- Test Evaluation Metrics ---
Mean Dice Coefficient: 0.6306
Mean Jaccard Index (IoU): 0.5622
Mean Pixel Accuracy: 0.9765

Per-Class Metrics (for the last test sample):
class_0: Dice = 0.9957, Jaccard = 0.9915
class_1: Dice = 0.7343, Jaccard = 0.5802
class_2: Dice = 0.8383, Jaccard = 0.7217
class_3: Dice = 0.6111, Jaccard = 0.4400
Inference complete. Resampled masks saved in: C:\Users\ISU\cv_dataset\goodlabelmapAndAlternative\test1\predictions
```

# Good & Alternative Dataset - Predicted Mask



# Bad Volume Label Mask Dataset - Predicted Mask

```
Epoch 97/100 -- Training Loss: 0.6013, Validation Loss: 0.7862
Epoch 98/100 -- Training Loss: 0.5980, Validation Loss: 0.7697
Epoch 99/100 -- Training Loss: 0.5940, Validation Loss: 0.7365
Epoch 100/100 -- Training Loss: 0.5899, Validation Loss: 0.7532
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\BadVolumeLabelMapDataset\test\predictions\MEDI-36(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\BadVolumeLabelMapDataset\test\predictions\MEDI-37(SCAN)_pred_resampled.nrrd

--- Test Evaluation Metrics ---
Mean Dice Coefficient: 0.5938
Mean Jaccard Index (IoU): 0.5093
Mean Pixel Accuracy: 0.9917

Per-Class Metrics (for the last test sample):
class_0: Dice = 0.9946, Jaccard = 0.9892
class_1: Dice = 0.2845, Jaccard = 0.1659
class_2: Dice = 0.8111, Jaccard = 0.6823
class_3: Dice = 0.2194, Jaccard = 0.1232
Inference complete. Resampled masks saved in: C:\Users\ISU\cv_dataset\BadVolumeLabelMapDataset\test\predictions
```

# Bad Volume Label Mask Dataset - Predicted Mask



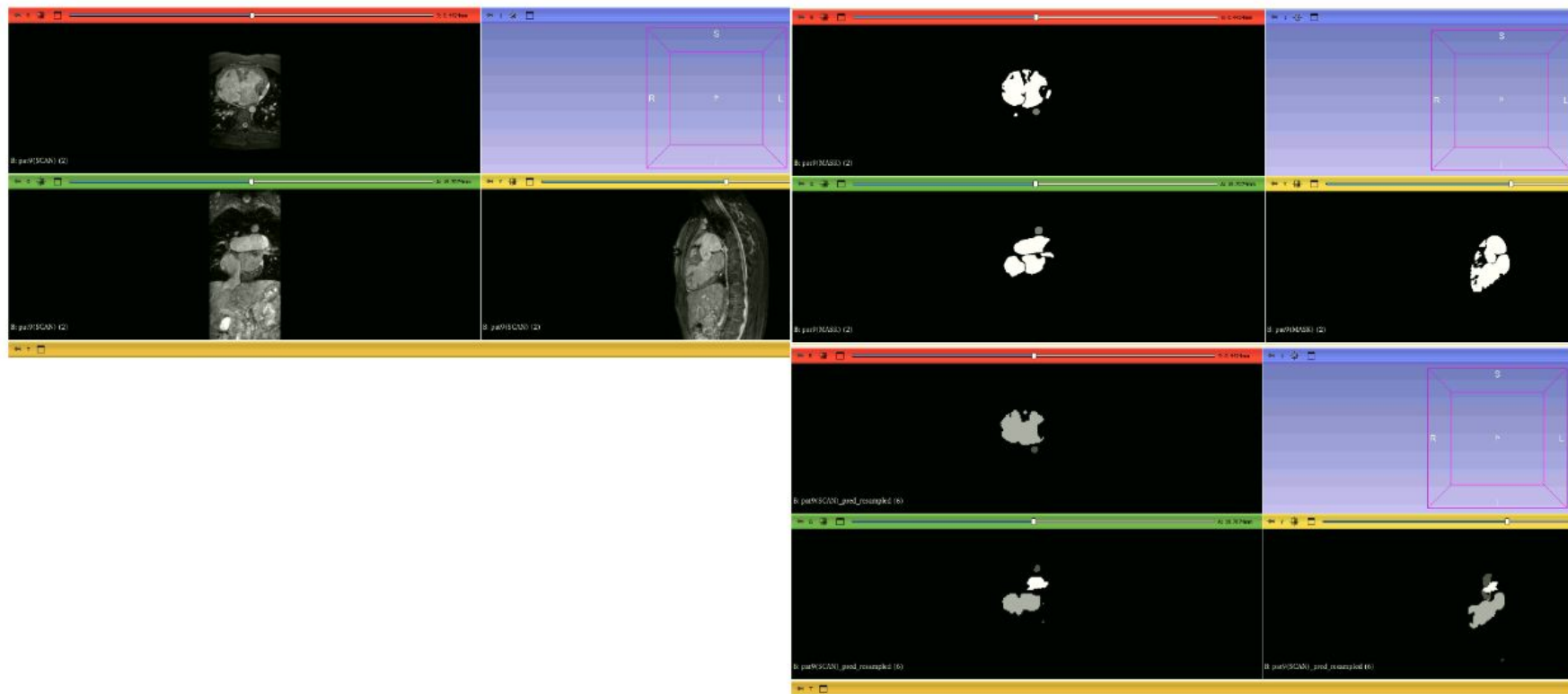
# Bad & Alternative Dataset - Predicted Mask

```
Epoch 87/100 -- Training Loss: 0.3258, Validation Loss: 0.4221
Epoch 88/100 -- Training Loss: 0.3181, Validation Loss: 0.3988
Epoch 89/100 -- Training Loss: 0.3084, Validation Loss: 0.4174
Epoch 90/100 -- Training Loss: 0.2936, Validation Loss: 0.4020
Epoch 91/100 -- Training Loss: 0.2881, Validation Loss: 0.3988
Epoch 92/100 -- Training Loss: 0.2790, Validation Loss: 0.4019
Epoch 93/100 -- Training Loss: 0.2681, Validation Loss: 0.3989
Epoch 94/100 -- Training Loss: 0.2600, Validation Loss: 0.4451
Epoch 95/100 -- Training Loss: 0.2552, Validation Loss: 0.3476
Epoch 96/100 -- Training Loss: 0.2492, Validation Loss: 0.3805
Epoch 97/100 -- Training Loss: 0.2393, Validation Loss: 0.3612
Epoch 98/100 -- Training Loss: 0.2332, Validation Loss: 0.3438
Epoch 99/100 -- Training Loss: 0.2252, Validation Loss: 0.3322
Epoch 100/100 -- Training Loss: 0.2211, Validation Loss: 0.3832
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\BadVolumeLabelAndAlternative\test\predictions\IMAEH-4(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\BadVolumeLabelAndAlternative\test\predictions\pat10(SCAN)_pred_resampled.nrrd
3D Slicer-compatible mask saved to: C:\Users\ISU\cv_dataset\BadVolumeLabelAndAlternative\test\predictions\pat9(SCAN)_pred_resampled.nrrd

--- Test Evaluation Metrics ---
Mean Dice Coefficient: 0.6860
Mean Jaccard Index (IoU): 0.6107
Mean Pixel Accuracy: 0.9817

Per-Class Metrics (for the last test sample):
class_0: Dice = 0.9951, Jaccard = 0.9902
class_1: Dice = 0.7594, Jaccard = 0.6121
class_2: Dice = 0.8168, Jaccard = 0.6903
class_3: Dice = 0.4537, Jaccard = 0.2934
Inference complete. Resampled masks saved in: C:\Users\ISU\cv_dataset\BadVolumeLabelAndAlternative\test\predictions
```

# Bad & Alternative Dataset - Predicted Mask





# Next Week

- Train the model on 36 total patients (Alternative Dataset) , previous week consisted of 16 patients
- Train the model on patients with Region of Interest Image & Masks
- Find out error In IMAEH - patient
- Configure nnUNet pipeline.
- Check If CUDA can enhance runtime

