



**MANIPAL INSTITUTE OF TECHNOLOGY**  
MANIPAL  
(A constituent unit of MAHE, Manipal)

**DEPARTMENT OF COMPUTER SCIENCE AND  
ENGINEERING**

**NAME OF THE BTECH PROGRAM: COMPUTER SCIENCE AND  
ENGINEERING**

# **Domain Adaptive Semantic Segmentation**

Biweekly Report

*Submitted by*

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*Under the guidance of*

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## **ABSTRACT**

Commonly, prior methods involve fine-tuning the entire network, which suffers from expensive parameter tuning and resulting in less cohesive distilled knowledge, thereby hindering the achievement of superior accuracies. To mitigate the challenges posed by extensive fine-tuning, adoption of visual prompt tuning is needed for a more parameter-efficient adaptation. Instead of learning the millions of parameters in the architecture, the prompts appended in the input spaces are learnable which fills the gap between the pretrained model on source model and the downstream tasks on the target domain

## **OBJECTIVES**

The objective of domain adaptive semantic segmentation is to adjust a pre-trained model originally designed for a source domain to suit an unlabeled target domain, all without requiring access to private source data. Objective is to firstly deal with datasets of natural images(Cityscape). Once the model is ready on natural images with reasonable performance, the idea can be extended to the MRI image dataset for tumor segmentation

## Project Details

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<i>Project Details</i>			
<b>Project Title</b>	Domain Adaptive Semantic Segmentation		
Project Duration	6 months	Start Date	January 17, 2024
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## Weeks No. 5 & 6

Sl. No.	Date	Details of work carried out	Comments
1	15.02.2024-16.02.2024	Worked on training the model with train data while also completing mandatory compliance training videos.	Had difficulty with figuring out how to train the model.
2	19.01.2024-23.01.2024	Got access to GPU and was debugging and modifying program to train model using train data on the cityscape dataset.	Had little difficulty in successfully training model
3	26.02.2024-27.02.2024	Successfully trained model on cityscape dataset. Wrote the code to pass validation data through model. Worked on improving performance and making code more efficient. Downloaded MRI images dataset and watched lectures on how MRI scans are generated and how MRI works. Learnt about the dataset.	Went smoothly
4	28.02.2024-01.03.2024	Completed the lectures. Learnt more about the MRI dataset. Modified program to test the model using test data. Debugged and modified program to improve performance.	Was able to understand the basics behind MRI and what the dataset includes.. Had difficulty with programming the testing part but was able to successfully test the model.

**Summary of the work done in the week:**

- Completed company related training videos
- Learnt basics on MRI
- Worked on program to implement semantic segmentation using Unet model architecture on cityscape dataset.

**Challenges faced during the work:**

- Had little difficulty with figuring out how to train, validate, and test model. Had to figure out how to modify model accordingly.
- Had to go through lectures few times to properly understand how MRI works.

**References:**

<https://case.edu/med/neurology/NR/MRI%20Basics.htm>

**Remarks:****Suggestions by the guide:****Signature of Student****Signature of the guide**

