

# **TEAM: KERAS**

**Team: Keras**

**IIT BHILAI**

# PROBLEM STATEMENT

Taken CVPR mde 2024 contest our aim is to get one of the best results in the contest.

# OUR WORK TO DO

1

**we are aimed to improve the results of mde challenge**

2

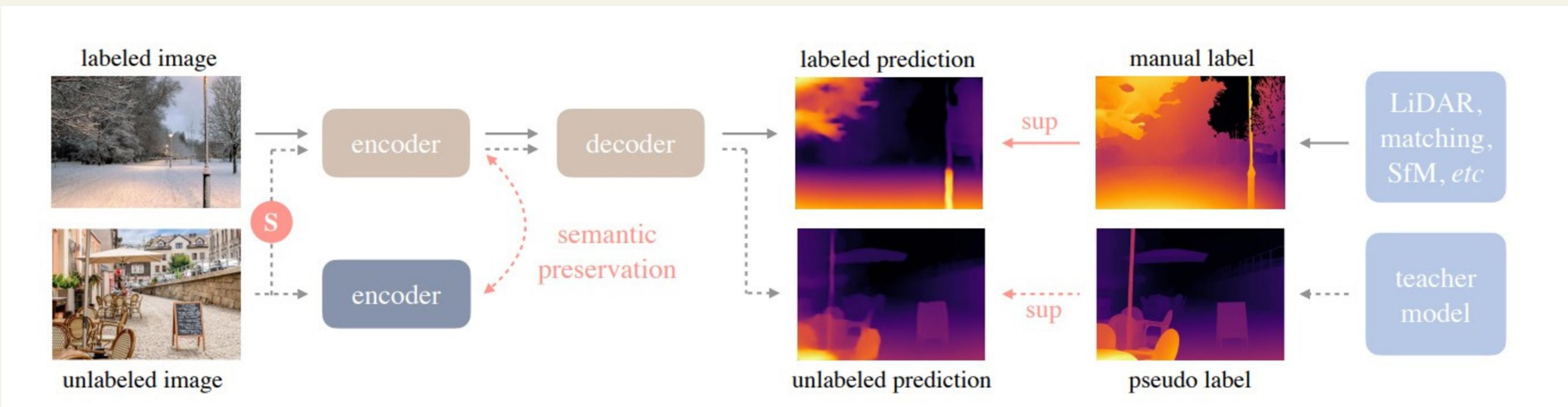
**we have taken depth\_anything\_model and we tried to merge zoe depth model in a defined way**

3

**by integrating depth anything with zoedepth we combine a new file**

# Depth anything model

- Initially depth anything is trained on DINDO V2 ENCODER, PRETRAINED ON 1.5M LABLED AND 62M UNLABLED IMAGES



# NOVELTY

- Since ZoeDepth has already been trained to accurately predict metric depth using fine-tuning, its pre-trained weights contain a lot of valuable information that can be leveraged to improve Depth Anything.
- Load ZoeDepth Pre-trained Weights: When initializing the Depth Anything model, instead of randomly initializing the weights of the depth decoder or the encoder, you would load ZoeDepth's pre-trained weights into the model.
- Fine-tune on Diverse Datasets: Once you have ZoeDepth's pre-trained weights as a base, you would fine-tune Depth Anything on your larger and more diverse dataset, which includes labeled and pseudo-labeled images. This allows Depth Anything to inherit ZoeDepth's metric depth skills and improve them for broader scenarios.

# METHODOLOGY

## Upsampling Blocks (\_upconv):

Each block uses ConvTranspose2d to upsample the feature maps, doubling the spatial resolution at each step.

ReLU is used as the activation function to introduce non-linearity.

## Final Convolution (final\_conv):

A final 3x3 convolution is used to reduce the number of channels to 1, which is the required depth map output (a single channel per pixel representing depth). Sigmoid activation is applied to map the output to the range [0, 1].

## Input Features:

The model takes in feature maps from the encoder (e.g., ResNet or ViT). These feature maps are progressively upsampled to produce a high-resolution depth map.

# CONTRIBUTION

**Sai Sudarshan Rao:** Responsible for model development and the integration of Zeodepth.

**K R Eashwar Sai:** Managed dataset preparation, including downloading and preprocessing the NYUv2 dataset, and ensuring the data pipeline was properly configured.

**Kotha Aditya:** Worked on model development, training implementation, and contributed to the deployment.

**Srinidhi:** Handled the inference and evaluation aspects of the project and enhanced the inference code.

**Sai Chandra Raju:** Managed the deployment of the model and also contributed to model training.