

# Spinal Keypoint Estimation Documentation

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## 1 Code Structure

All code pertinent to spinal keypoint estimation can be found here. In the repository, there are 5 subdirectories. The BBoxEstimation subdirectory contains the model definition and loss class for the bounding box estimation task. The KeyPointEstimation subdirectory contains the model definition and loss class for the keypoint estimation task. The datasets directory contains dataset and dataloader objects for loading the training and test dataset. The tools subdirectory contains the files responsible for training the models and evaluating them. The scripts subdirectory contains auxiliary data-preparation scripts that samples frames uniformly from input videos.

## 2 Usage

To train the model from scratch, a directory named "data" must be created in the main directory, where all of the instances to use for training must be placed. Then, the training file must be run with the following command line arguments: `'python tools/train_net.py -t kp -gpu True -e 50 -lr 0.001'`. Here, `-t` is the task flag, corresponding to keypoint, `-gpu` is the GPU flag, which should be set to True if CUDA is enabled, and `lr` is the learning rate to be used for training. Once a model is trained, it can be instantiated by creating a new `KPModel` object and passing a path to the trained weights in the `weights_path` parameter.