Workflow

11-785 recitation 0L

What are we trying to accomplish with DL models?

- Use training data to find patterns so we can predict the 'target variable' on unseen data.
- We need to **train** the model so it learns these patterns.
- We need to **evaluate** the model to see how it performs while training
- We need to **test** the model to see how it performs on a completely **unseen** dataset.

Three different datasets

- **Train**
  - The dataset the model uses to learn parameters; this is the dataset the model learns to fit.
- **Validation**
  - This dataset is used to evaluate the model during training and is used to tune hyperparameters for the model
  - The reason we need a validation dataset is because performance on the training dataset is not a good indicator of how the model generalizes to unseen data and if we used the test dataset for evaluation we'd be biasing the model to perform better on that dataset, i.e. the test data wouldn't be completely unseen anymore
- **Test**
  - The dataset used to measure model performance on completely unseen data

The Process

Data Loading & Processing	Training & Evaluation	Testing

- Data is loaded from files
- Data is converted to PyTorch Dataset and Dataloader classes
- Processing techniques such as normalizations and augmentations are performed here

- We iterate over the train dataset for a certain number of epochs
- The model learns parameters
- Performance is evaluated using the validation dataset

- Final step of the process where the performance of the model is measured on unseen data

Detailed workflow

01 Data Loading & Processing
- Load data from files
- Create PyTorch Dataset class
- Use Dataset class to make DataLoader

02 Training & Evaluation
- Create Model class
- Initialize Model, Optimizer and Loss
- Write an eval function
- Write a train function
- Write a complete train loop

03 **Testing**
- Write a test function
- Generate predictions for test data