

MLT : Week 6

Ridge, Lasso Regression & Cross Validation Methods

Vivek Sivaramakrishnan

The following weight vectors are learned from a six dimensional dataset, using Linear, Ridge and Lasso regression, not necessarily in the same order. Find the method used based on the weight vectors.

$$\mathbf{w}_1 = [0.5, 0, 0.25, 0, 0, -0.14]$$

$$\mathbf{w}_2 = [0.8, -0.23, 0.45, 0.2, 0.31, -0.54]$$

$$\mathbf{w}_3 = [0.24, -0.03, 0.1, 0.02, 0.09, -0.14]$$

The following weight vectors are learned from a six dimensional dataset, using Linear, Ridge and Lasso regression, not necessarily in the same order. Find the method used based on the weight vectors.

Lasso.

The weight vectors from Lasso regression are sparse; some of the components are 0

$$\mathbf{w}_1 = [0.5, 0, 0.25, 0, 0, -0.14]$$

$$\mathbf{w}_2 = [0.8, -0.23, 0.45, 0.2, 0.31, -0.54]$$

$$\mathbf{w}_3 = [0.24, -0.03, 0.1, 0.02, 0.09, -0.14]$$

The following weight vectors are learned from a six dimensional dataset, using Linear, Ridge and Lasso regression, not necessarily in the same order. Find the method used based on the weight vectors.

$$\mathbf{w}_1 = [0.5, 0, 0.25, 0, 0, -0.14]$$

$$\mathbf{w}_2 = [0.8, -0.23, 0.45, 0.2, 0.31, -0.54]$$

$$\mathbf{w}_3 = [0.24, -0.03, 0.1, 0.02, 0.09, -0.14]$$

Lasso.

The weight vectors from Lasso regression are sparse; some of the components are 0

Ridge.

The norm of weight vectors from ridge is lower than that of regular linear regression, hence \mathbf{w}_3 in contrast to \mathbf{w}_2 is from ridge,

The following weight vectors are learned from a six dimensional dataset, using Linear, Ridge and Lasso regression, not necessarily in the same order. Find the method used based on the weight vectors.

$$\mathbf{w}_1 = [0.5, 0, 0.25, 0, 0, -0.14]$$

Lasso.

The weight vectors from Lasso regression are sparse; some of the components are 0

$$\mathbf{w}_2 = [0.8, -0.23, 0.45, 0.2, 0.31, -0.54]$$

Linear.

Only option left out.

$$\mathbf{w}_3 = [0.24, -0.03, 0.1, 0.02, 0.09, -0.14]$$

Ridge.

The norm of weight vectors from ridge is lower than that of regular linear regression, hence \mathbf{w}_3 in contrast to \mathbf{w}_2 is from ridge,

We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process.

We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data,

We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

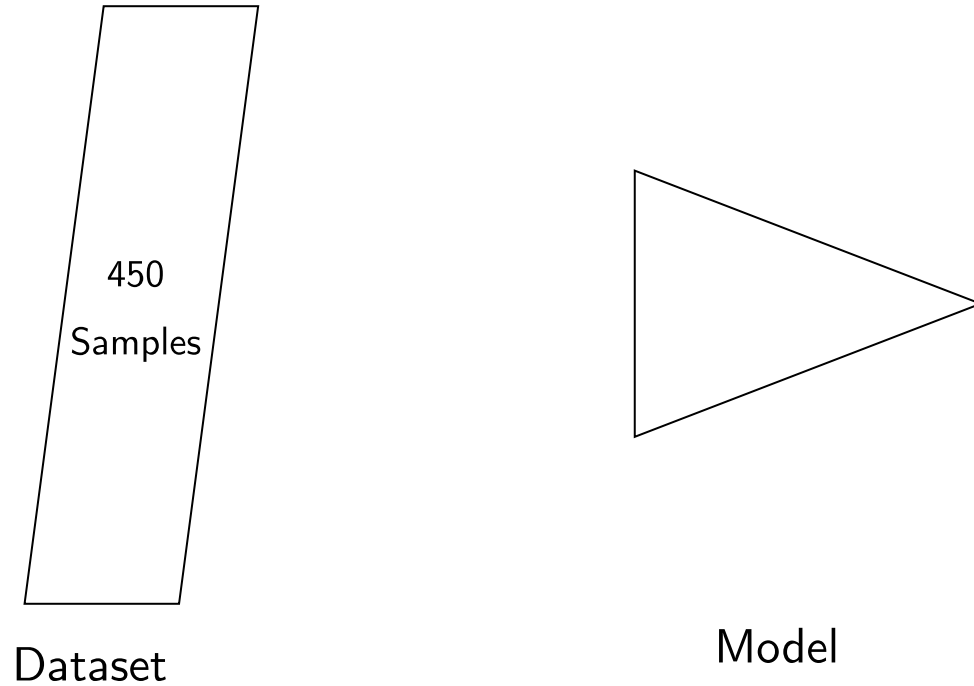
The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

Find the values of n_1 , n_2 & n_3 .

We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subest of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

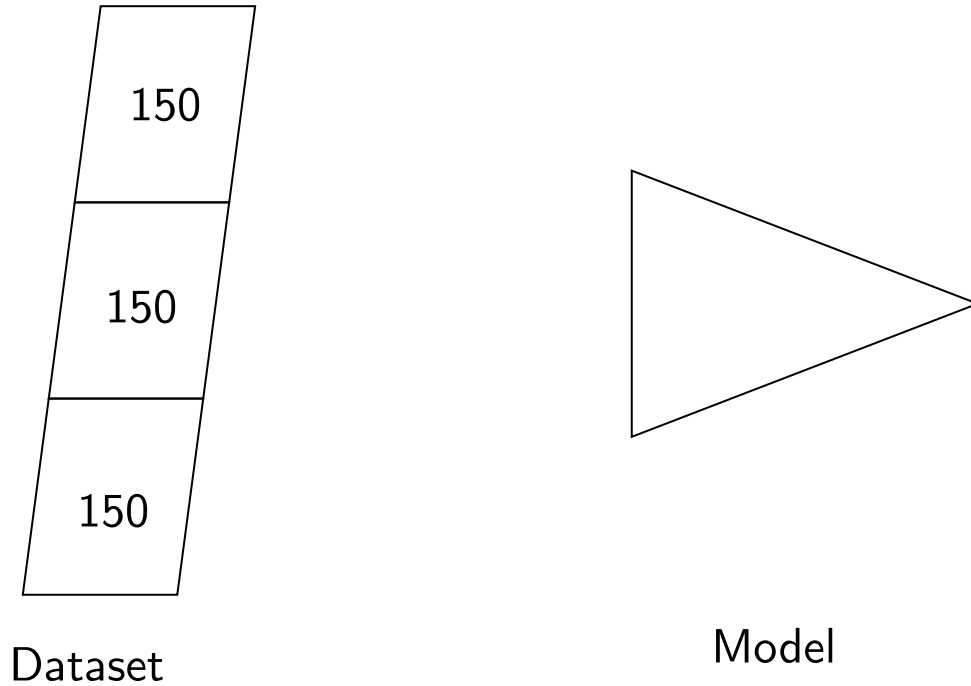
Find the values of n_1 , n_2 & n_3 .



We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

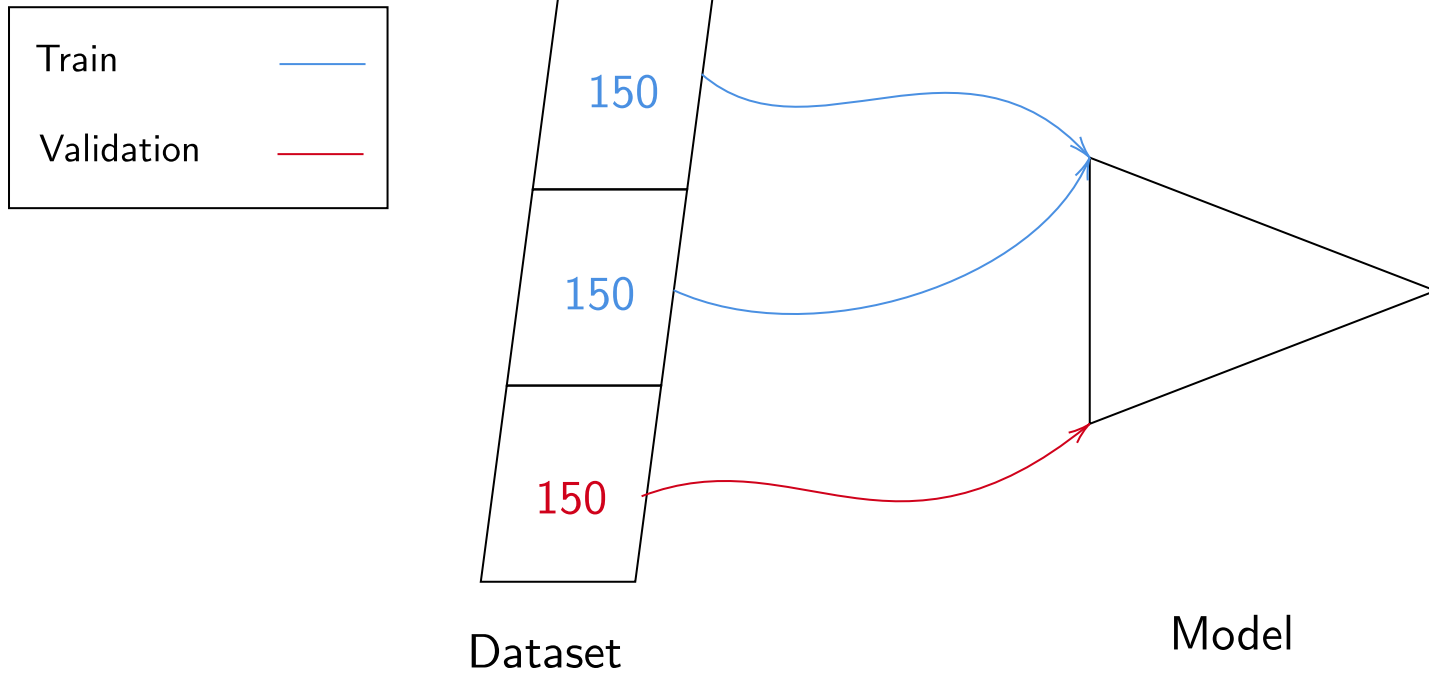
Find the values of n_1 , n_2 & n_3 .



We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

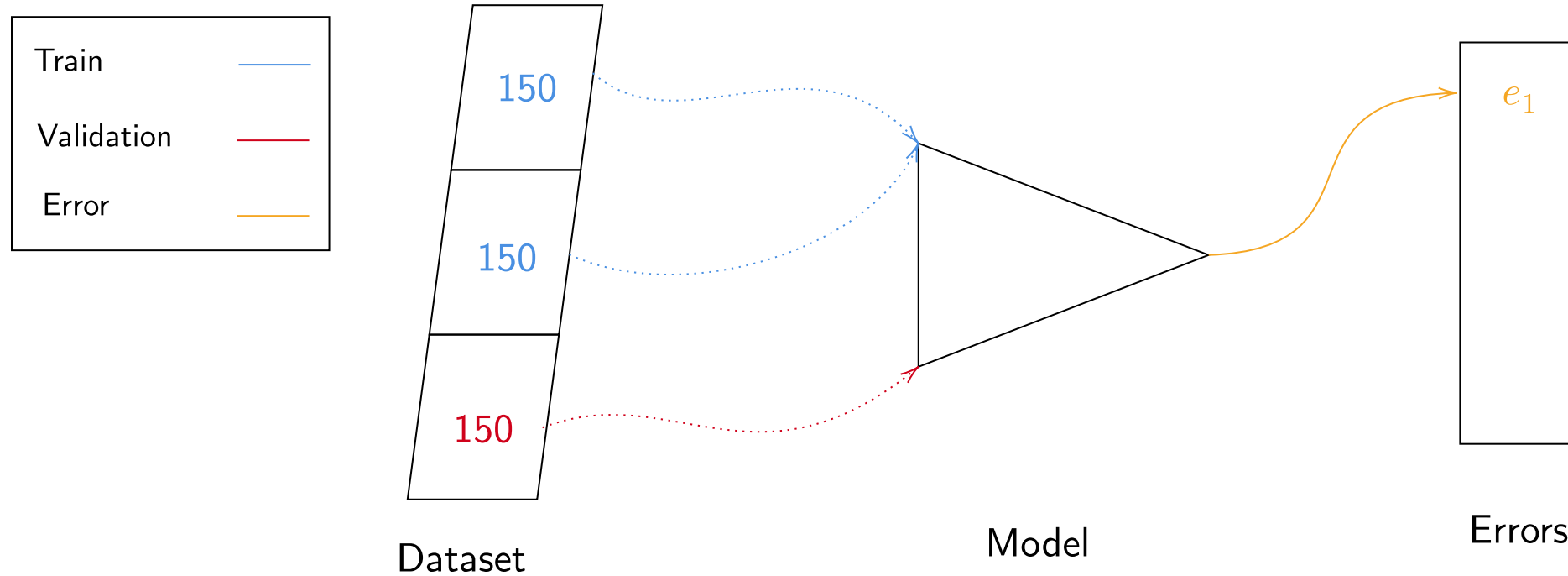
Find the values of n_1 , n_2 & n_3 .



We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

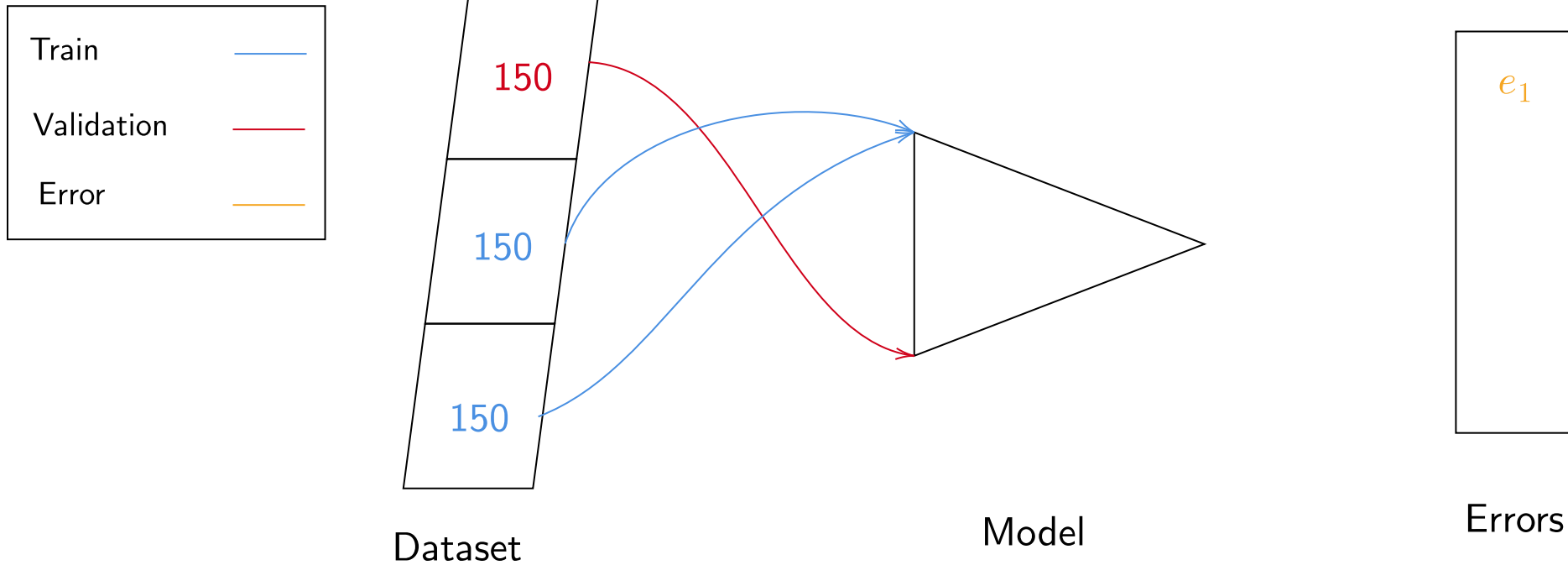
Find the values of n_1 , n_2 & n_3 .



We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

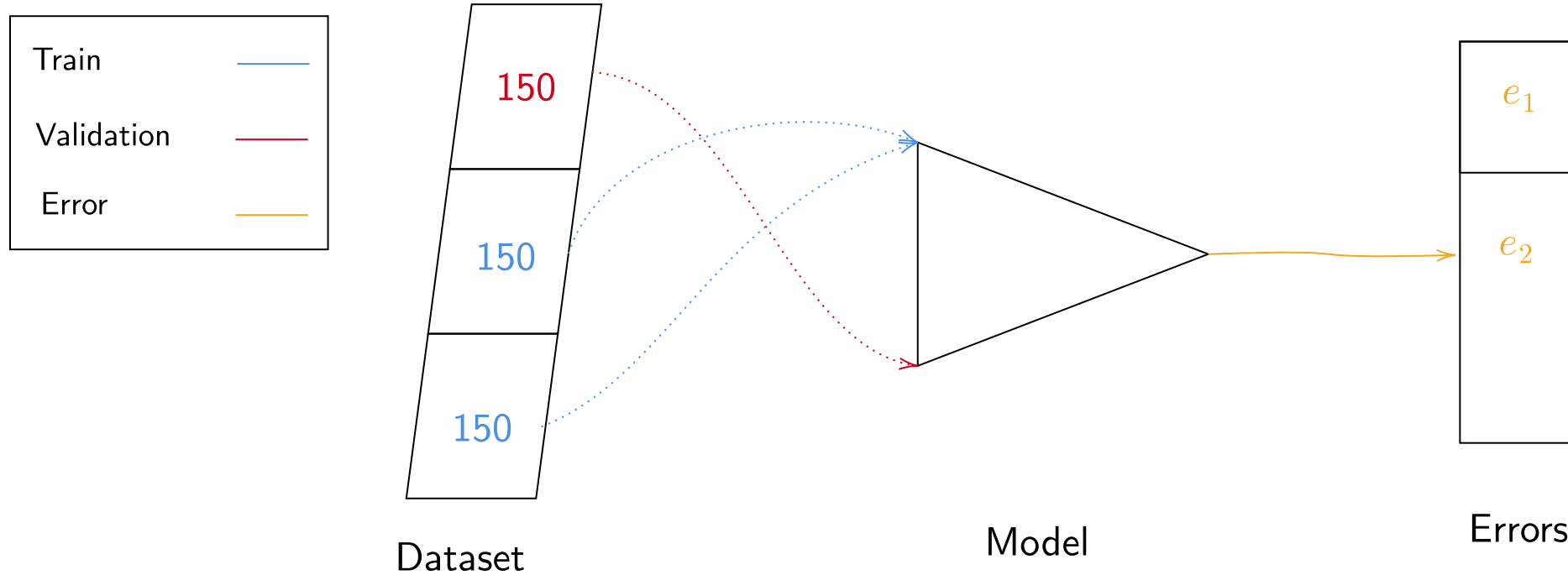
Find the values of n_1 , n_2 & n_3 .



We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

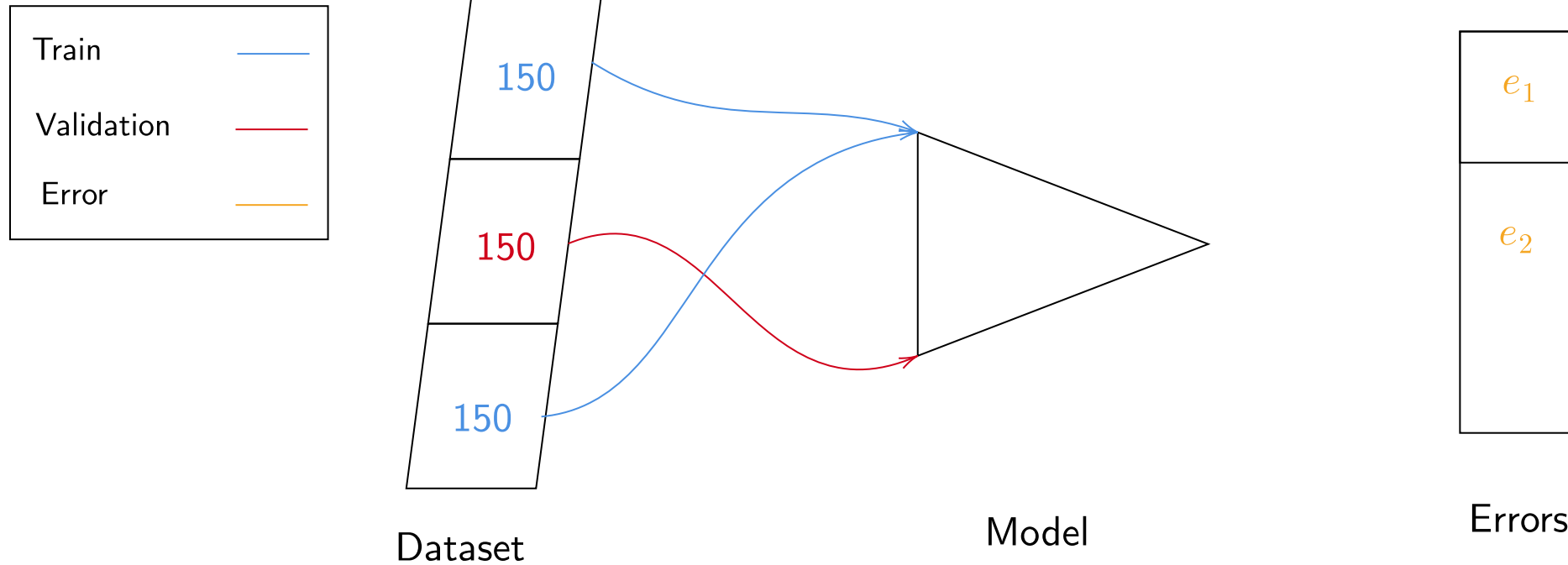
Find the values of n_1 , n_2 & n_3 .



We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

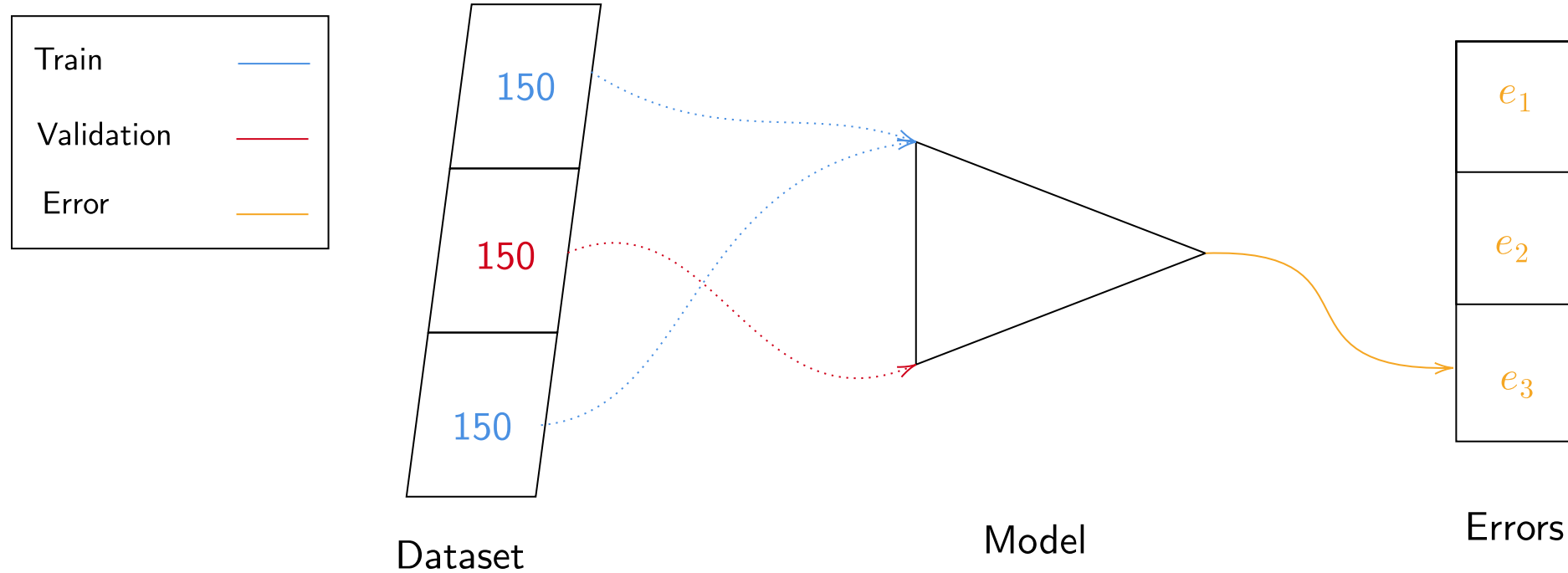
Find the values of n_1 , n_2 & n_3 .



We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

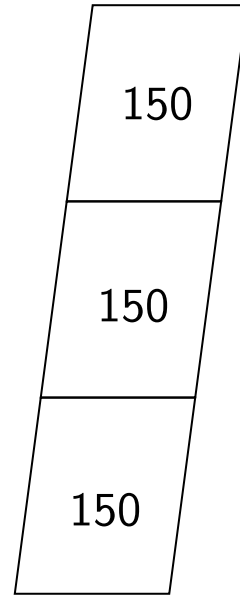
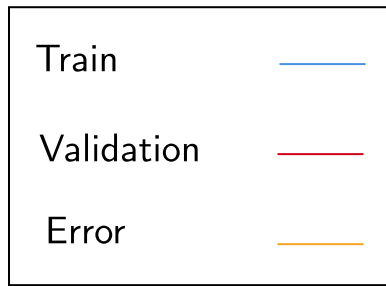
Find the values of n_1 , n_2 & n_3 .



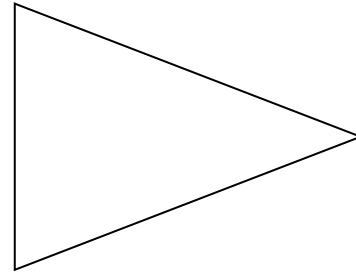
We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

Find the values of n_1 , n_2 & n_3 .



Dataset



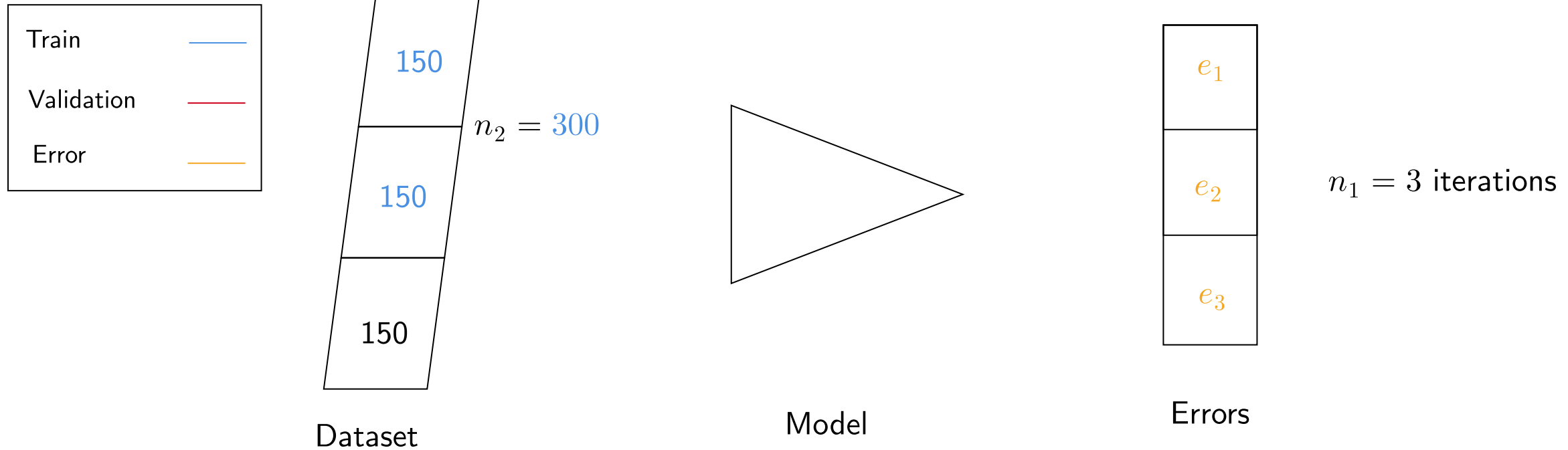
Errors

$n_1 = 3$ iterations

We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

Find the values of n_1 , n_2 & n_3 .



We have 450 training examples, and want to compute 3-Fold Cross-Validation error.

The error is calculated as the average of errors obtained from n_1 iterations of the cross-validation process. Each iteration involves training a model on a subset of size n_2 of the training data, and evaluating its performance on a disjoint subset of size n_3 .

Find the values of n_1 , n_2 & n_3 .

