SUMMARIZE:

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| Q1: What is an error rate?  A: *frequency at which errors occurs*. |
| Q2: Where you could use other machine-learning models? |
| A: *Recommendation systems, Social media connections, Image recognition, Natural language processing (NLP), Virtual personal assistants, Stock market predictions, Credit card fraud detection, Traffic predictions, Self-driving car technology, Facial recognition, Email automation and spam filtering, Healthcare advancement etc.* |
| Q3: What is the difference between supervised and unsupervised training?  A:*Supervised learning uses labeled training data, and unsupervised learning does not.* |
| Q4: How to import different models from the scikit-learn package?  A: *You can import as many models as you need by simply adding the corresponding import statements.For example: Linear Regression* (```from sklearn.linear\_model import LinearRegression```); *Logistic Regression* (```from sklearn.linear\_model import LogisticRegression```) *and Decision Tree* (```from sklearn.tree import DecisionTreeClassifier # for classification; from sklearn.tree import DecisionTreeRegressor # for regression```) |
| Q5: How can you evaluate the performance of a machine learning model in scikit-learn?  A: *Evaluating involves using a variety of metrics depending on the type of problem you're solving: classification or regression.* |
| Q6: What metrics are commonly used for evaluation?  A:   * ***Classification:*** *Accuracy, precision, recall, F1-score, ROC-AUC, confusion matrix, and classification report.* * ***Regression:*** *Mean Absolute Error (MAE), Mean Squared Error (MSE), Root Mean Squared Error (RMSE), and R-squared (R²).* * ***Cross-Validation****: K-fold cross-validation and GridSearchCV for model tuning and generalization evaluation.* |
| Q7: What is model overfitting, and how can it be prevented?  A: *Model overfitting occurs when a model learns the noise and details in the training data too well, leading to poor performance on unseen data. It can be prevented by:*   * *Using cross-validation* * *Regularization (e.g., L1, L2)* * *Reducing model complexity* * *Pruning decision trees* * *Adding more data* * *Using early stopping in iterative models* |