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<div align="center">Final Project Write-Up: Bird Classification</div>

For the final project, I undertook a bird species classification task using machine learning techniques, aiming to predict bird species qualitatively and estimate Humerus Length quantitatively based on morphological features like the length of the humerus, ulna, femur, etc. The project began with preprocessing the dataset, including cleaning and preparing it, followed by visualizing data distributions to gain insights. Various predictive models, such as Random Forest Classifier, Logistic Regression, and Linear Regression, were built and evaluated for their accuracy and performance metrics. Tuning and validation were crucial steps in refining the models, accomplished through techniques like cross-validation and grid search. Two prediction tasks were pursued: qualitative prediction using Random Forest Classifier and quantitative prediction using Linear Regression. The models' performance and insights were effectively communicated through visualizations like confusion matrices and scatter plots. The project was presented in a Google Colab Notebook, showcasing clarity through well-organized code and commentary. Creativity was demonstrated in model optimization strategies. The Mean Squared Error (MSE) for the Linear Regression model was 40.23, with an R-squared (R^2) Score of 0.988, indicating high accuracy in predicting Humerus Length. Additionally, the Random Forest Classifier achieved an accuracy of 82.14% in predicting bird species. Overall, based on everything you could possibly measure about a bird, start off with the humerus to truly identify it. .