Weekly report 6 april

For our final iteration we obtained the following results

* Mean Absolute Error (MAE) on testing set: 0.6902777777777778
* Mean Squared Error (MSE) on testing set: 120.24305555555556
* Root Mean Squared Error (RMSE) on testing set: 10.965539455747518
* Coefficient of determination (R^2) on testing set: 0.989537676100277

The decision tree regression model achieved high accuracy in predicting actual object angles from reported angles in images. The model demonstrates the mapping and functions between predicted and actual angles.

The comparatively higher MSE can be explained due to some predictions being extreme outliers which skews the calculation. Overall the accuracy of our model is quite high and whilst this usually points towards overfitting, we were able to determine that since the problem was simplistic in nature and also since the training and test data were extremely similar as well, the model was able to adapt well to both, to confirm that the model is not overfitted we also ran a K-folds validation, where the Mean Squared Error dropped to 75.811.

K-fold cross-validation confirmed the model's robustness, This validation assures against overfitting and highlights the model's generalizability to new data.

In conclusion, the decision tree regression model offers accurate mapping between the actual and reported angles, by utilizing coordinates and input angles.