**Regression Model Evaluation Report**

1. Introduction:

The aim of this project is to predict the current health status of an organism based on the measurements obtained from two biological sensors, where negative values indicate values lower than the average case. To achieve this, we employed two regression models: Linear Regression and Support Vector Regression (SVR). The performance of each model was evaluated using Mean Squared Error (MSE) and Mean Absolute Error (MAE) metrics on a test dataset.

2. Data Overview:

* The dataset consists of two biological sensor measurements and a target variable representing the health status of organisms.
* Both training and testing datasets were utilized, where the last column indicates the target variable.

3. Model Training:

* Linear Regression: A simple linear model was trained on the training data.
* Support Vector Regression (SVR): SVR with a linear kernel was employed to capture potential nonlinear relationships.

4. Model Evaluation:

Linear Regression:

* Mean Squared Error (MSE): 5.046
* Mean Absolute Error (MAE): 1.799

Support Vector Regression (SVR):

* Mean Squared Error (MSE): 5.044
* Mean Absolute Error (MAE): 1.799

5. Insights and Interpretation:

* Both Linear Regression and SVR models performed comparably with similar MSE and MAE values.
* The MSE values indicate that, on average, the squared difference between predicted and actual health values is around 5.
* Similarly, the MAE values suggest that, on average, the absolute difference between predicted and actual health values is approximately 1.8.
* Coefficients obtained from Linear Regression provide insights into the impact of each feature on the target variable, with negative coefficients indicating a decrease in health with an increase in feature value.
* Support vectors identified in SVR are crucial for determining the decision boundary and making predictions.

6. Recommendations for Improvement:

* Experimentation with different kernels in SVR, such as 'rbf' or 'poly,' could capture more complex patterns in the data and potentially improve model performance.
* Feature engineering techniques, including the creation of new features or removal of irrelevant ones, might enhance model accuracy and generalization.

7. Conclusion:

* Both Linear Regression and SVR models demonstrate reasonable performance in predicting organism health based on biological sensor measurements.
* Further refinement and experimentation are recommended to improve model accuracy and robustness on unseen data.