New SCI task- 10MO-Yahyavi (Student Stress Level)

Target: Stress Level

Phase 1: Prediction Task

* Balance the dataset using the SMOTE-ENC over-sampling
* Do five-fold cross validation (repeat 5 times each time randomizing data)
* Use stacking for XGBC and RFC models combination and optimize the ensemble model by the Human evolutionary optimization algorithm (ensemble-hybrid model development)
* Use these metrics for performance evaluation: Accuracy, Precision, Recall, F1-score, MCC, and HSS
* Extract SHAP dependence plots (sample Figure is provided) and the Morris screening sensitivity analysis

Phase 2: What-if scenarios

Select all instances from the original dataset where the target variable stress Level = 10, 9, and 8, and study the following scenarios (the ensemble-hybrid model should conduct all predictions).

* Scenario 1: Increase the Hydration Level by 25% for all samples and predict the stress Level again.
* Scenario 2: Increase the Sleep Duration by 2 hours for all samples and predict the stress Level again.
* Scenario 3: Increase the physical Activity Level by 20% for all samples and predict the stress Level again.