Project Title: Predicting students engagement using machine learning techniques

Instructor: Prof. Mari Ostendorf
Student: Neha Kardam
EE511: Introduction to Statistical Learning
Winter 2021

UNIVERSITY of WASHINGTON

TASK DESCRIPTION

- ❑ Problem: Regression
- ❑ Input (X) : Student Information
  - ➢ Numeric variable (ex. Age, GPA)
  - ➢ Discrete variables (ex. Class, Gender, Race)
- ❑ Output (Y) : Engagement Scale
  - ➢ Effort Scale
  - ➢ Belonging Scale
  - ➢ Peer Support Scale
  - ➢ Faculty Support Scale
  - ➢ Positive Emotional Engagement scale
- ❑ Evaluation: Mean Square Error

APPROACH & BASELINE

- Approach:
  - Pre-Processing
  - Data Split (Train vs Test)
  - One Hot Encoding
  - Model Selection
  - Hyperparameter Tuning using Cross Validation
- Baseline: Ordinary Least Squares (OLS)

EXPERIMENTS

Models / Scales	OLS	Ridge	Lasso	Elastic	GLR-Poisson	GLR-Gamma	Elipson SVM	NU SVM	Stochastic Gradient
Effort	0.7639	0.7125	0.7598	0.7254	0.7183	0.7229	0.7601	0.7598	0.7539
Belonging	0.6079	0.5857	0.5941	0.6015	0.5830	0.6216	0.5942	0.5942	0.6120
Faculty Support	0.5553	0.5328	0.5432	0.5432	0.5425	0.5430	0.5454	0.5455	0.5437
Peer Support	0.6740	0.6767	0.6851	0.6851	0.6803	0.6768	0.6851	0.6850	0.6750
Positive Emotional Engagement	0.6384	0.6314	0.7339	0.7339	0.6303	0.6402	0.7427	0.7380	0.6911

THANK YOU!