**Środowiska uruchomieniowy AutoML**

# Predykcja poziomu zdrowia psychicznego studentów

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## Wstęp

### Cel projektu

* 1. Celem projektu jest predykcja stanu zdrowia psychicznego użytkownika (grupa docelowa – studenci) na podstawie kwestionariusze

### Opis wybranej bazy danych

<https://www.kaggle.com/datasets/mohsenzergani/bangladeshi-university-students-mental-health>

Wszystkie wartości podane w wybranej bazie danych są kategorialne oraz nie ma żadnych brakujący danych. Obecne kolumny to (podział na Anxiety, Stress i Depression przedstawiają podział na modele) :

* "1. Age"
  + 18-22
  + 23-26
  + 27-30
  + Above 30
  + Below 18
* "2. Gender"
  + Female
  + Male
  + Prefer not to say
* "3. University"
  + American International University Bangladesh (AIUB)
  + BRAC University
  + Bangladesh Agricultural University (BAU)
  + Bangladesh University of Engineering and Technology (BUET)
  + Daffodil University
  + Dhaka University (DU)
  + Dhaka University of Engineering and Technology (DUET)
  + East West University (EWU)
  + Independent University, Bangladesh (IUB)
  + Islamic University of Technology (IUT)
  + North South University (NSU)
  + Patuakhali Science and Technology University
  + Rajshahi University (RU)
  + Rajshahi University of Engineering and Technology (RUET)
  + United International University (UIU)
* "4. Department"
  + Biological Sciences
  + Business and Entrepreneurship Studies
  + Engineering - CS / CSE / CSC / Similar to CS
  + Engineering - Civil Engineering / Similar to CE
  + Engineering - EEE/ ECE / Similar to EEE
  + Engineering - Mechanical Engineering / Similar to ME
  + Engineering - Other
  + Environmental and Life Sciences
  + Law and Human Rights
  + Liberal Arts and Social Sciences
  + Other
  + Pharmacy and Public Health
* "5. Academic Year"
  + First Year or Equivalent
  + Fourth Year or Equivalent
  + Other
  + Second Year or Equivalent
  + Third Year or Equivalent
* "6. Current CGPA"
  + - 2.99
  + 3.00 - 3.39
  + 3.40 - 3.79
  + 3.80 - 4.00
  + Below 2.50
  + Other
* "7. Did you receive a waiver or scholarship at your university?"
  + No
  + Yes

**Anxiety**

* "1. In a semester, how often you felt nervous, anxious or on edge due to academic pressure?"
  + 0 - 3
* "2. In a semester, how often have you been unable to stop worrying about your academic affairs?"
  + 0 - 3
* "3. In a semester, how often have you had trouble relaxing due to academic pressure?"
  + 0 - 3
* "4. In a semester, how often have you been easily annoyed or irritated because of academic pressure?"
  + 0 - 3
* "5. In a semester, how often have you worried too much about academic affairs?"
  + 0 - 3
* "6. In a semester, how often have you been so restless due to academic pressure that it is hard to sit still?"
  + 0 - 3
* "7. In a semester, how often have you felt afraid, as if something awful might happen?"
  + 0 - 3
* "Anxiety Value"
  + 0 - 21
* "Anxiety Label"
  + Mild Anxiety
  + Minimal Anxiety
  + Moderate Anxiety
  + Severe Anxiety

**Stress**

* "1. In a semester, how often have you felt upset due to something that happened in your academic affairs?"
  + 0 - 4
* "2. In a semester, how often you felt as if you were unable to control important things in your academic affairs?"
  + 0 - 4
* "3. In a semester, how often you felt nervous and stressed because of academic pressure?"
  + 0 - 4
* "4. In a semester, how often you felt as if you could not cope with all the mandatory academic activities? (e.g, assignments, quiz, exams)"
  + 0 - 4
* "5. In a semester, how often you felt confident about your ability to handle your academic / university problems?"
  + 0 - 4
* "6. In a semester, how often you felt as if things in your academic life is going on your way?"
  + 0 - 4
* "7. In a semester, how often are you able to control irritations in your academic / university affairs?"
  + 0 - 4
* "8. In a semester, how often you felt as if your academic performance was on top?"
  + 0 - 4
* "9. In a semester, how often you got angered due to bad performance or low grades that is beyond your control?"
  + 0 - 4
* "10. In a semester, how often you felt as if academic difficulties are piling up so high that you could not overcome them?"
  + 0 - 4
* "Stress Value"
  + 0 - 40
* "Stress Label"
  + High Perceived Stress
  + Low Stress
  + Moderate Stress

**Depression**

* "1. In a semester, how often have you had little interest or pleasure in doing things?"
  + 0 - 3
* "2. In a semester, how often have you been feeling down, depressed or hopeless?"
  + 0 - 3
* "3. In a semester, how often have you had trouble falling or staying asleep, or sleeping too much?"
  + 0 - 3
* "4. In a semester, how often have you been feeling tired or having little energy?"
  + 0 - 3
* "5. In a semester, how often have you had poor appetite or overeating?"
  + 0 - 3
* "6. In a semester, how often have you been feeling bad about yourself - or that you are a failure or have let yourself or your family down?"
  + 0 - 3
* "7. In a semester, how often have you been having trouble concentrating on things, such as reading the books or watching television?"
  + 0 - 3
* "8. In a semester, how often have you moved or spoke too slowly for other people to notice? Or you've been moving a lot more than usual because you've been restless?"
  + 0 - 3
* "9. In a semester, how often have you had thoughts that you would be better off dead, or of hurting yourself?"
  + 0 - 3
* "Depression Value"
  + 0 - 27
* "Depression Label"
  + Mild Depression
  + Minimal Depression
  + Moderate Depression
  + Moderately Severe Depression
  + No Depression
  + Severe Depression

W czasie przygotowań danych zostały usunięte kolumny:

* "3. University"
* "6. Current CGPA"
* "Anxiety Value"
* "Stress Value"
* "Depression Value"

## Model uczenia maszynowego

Zostały wybrane trzy modele uczenia maszynowego które odpowiednio skupiały się na Anxiety, Stress i Depression do trenowania ich trafiły odpowiednio dane ogólne jaki szczegółowe dane im odpowiadające.

### Model skupiający się na Anxiety

**Informacje o wartości przewidywanej:**

*count :* 1383

*unique :* 3

*top :* Moderate Stress

*freq :* 916

**Informacje o wytrenowanych modelach:**

|  |  |  |  |
| --- | --- | --- | --- |
| model | score\_val | can\_infer | fit\_order |
| WeightedEnsemble\_L2 | 0.956229 | True | 6 |
| NeuralNetTorch | 0.952862 | True | 5 |
| ExtraTreesEntr | 0.932660 | True | 4 |
| ExtraTreesGini | 0.932660 | True | 3 |
| RandomForestGini | 0.930976 | True | 1 |
| RandomForestEntr | 0.925926 | True | 2 |

**Model z najwyższym score\_val:**

*accuracy :* 0.9562289562289562

*balanced\_accuracy :* 0.8529656862745099

*mcc :* 0.9056213024249822

### Model skupiający się na Stress

**Informacje o wartości przewidywanej:**

*count :* 1383

*unique :* 3

*top :* Moderate Stress

*freq :* 916

**Informacje o wytrenowanych modelach:**

|  |  |  |  |
| --- | --- | --- | --- |
| model | score\_val | can\_infer | fit\_order |
| WeightedEnsemble\_L2 | 0.956229 | True | 6 |
| NeuralNetTorch | 0.952862 | True | 5 |
| ExtraTreesEntr | 0.932660 | True | 4 |
| ExtraTreesGini | 0.932660 | True | 3 |
| RandomForestGini | 0.930976 | True | 1 |
| RandomForestEntr | 0.925926 | True | 2 |

**Model z najwyższym score\_val:**

*accuracy :* 0.9562289562289562

*balanced\_accuracy :* 0.8529656862745099

*mcc :* 0.9056213024249822

### Model skupiający się na Depression

**Informacje o wartości przewidywanej:**

*count :* 1383

*unique :* 6

*top :* Severe Depression

*freq :* 350

**Informacje o wytrenowanych modelach:**

|  |  |  |  |
| --- | --- | --- | --- |
| model | score\_val | can\_infer | fit\_order |
| ExtraTreesGini | 0.880471 | True | 3 |
| NeuralNetTorch | 0.878788 | True | 5 |
| WeightedEnsemble\_L2 | 0.878788 | True | 6 |
| ExtraTreesEntr | 0.877104 | True | 4 |
| RandomForestGini | 0.863636 | True | 1 |
| RandomForestEntr | 0.860269 | True | 2 |

**Model z najwyższym score\_val:**

*accuracy :* 0.8787878787878788

*balanced\_accuracy :* 0.8997978911327918

*mcc :* 0.8454659169230264

## Opis aplikacji

### Wykorzystane technologie

### Opis funkcjonalności

### Inne

## Załączniki:

<https://github.com/Nauaho/WednesdayStruggle.git>