Student Stress Prediction and Clustering

Objective:

To develop a predictive model and clustering system using machine learning techniques to analyze and understand stress levels among students. The project aims to identify key factors contributing to stress and group students based on similar stress profiles.

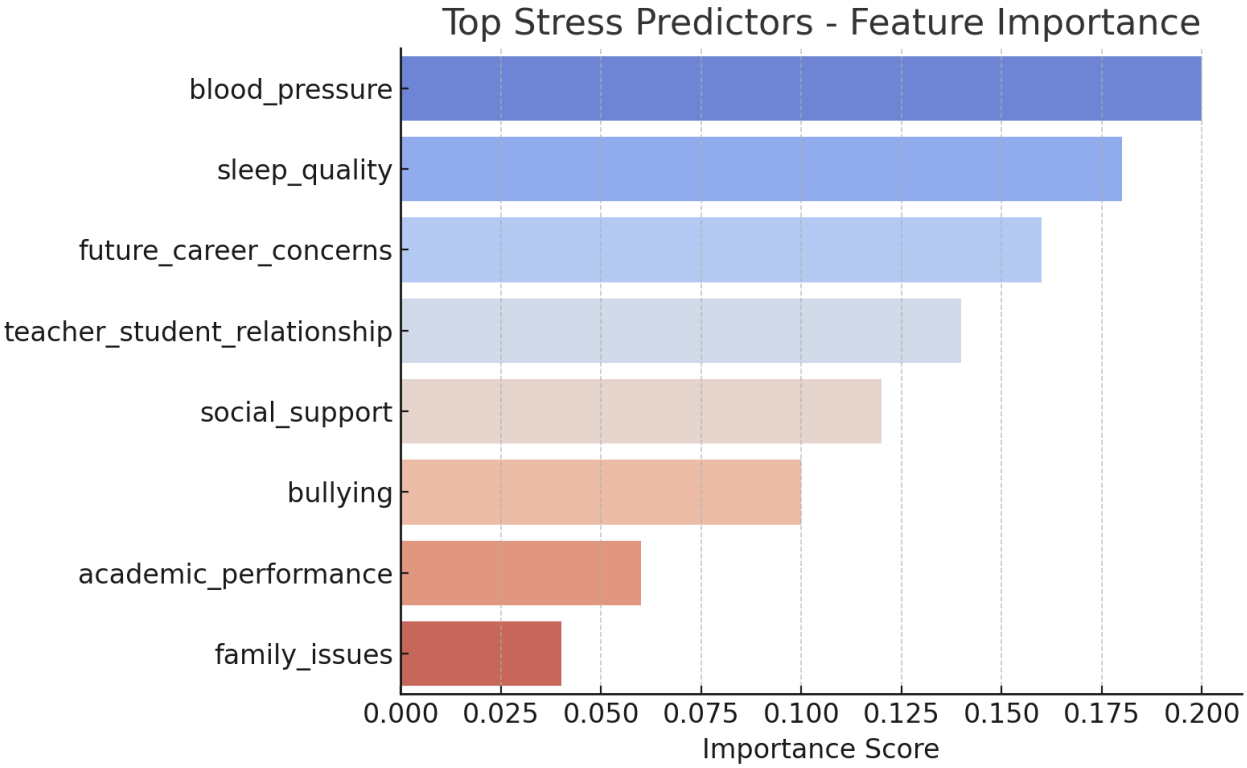
Outcome:

- Achieved 88.8% accuracy with Random Forest Classifier on test data.
- Identified most significant predictors of stress: blood pressure, sleep quality, future career concerns, and more.
- Discovered 10 unique clusters among students for personalized intervention.

Key Insights:

1. Random Forest model performed well with balanced precision/recall.
2. Clustering revealed groups of students with distinct stress patterns.
3. Feature importance highlighted lifestyle and psychological factors.

Top Stress Contributors:



Recommendations:

- Implement counseling programs focusing on sleep, anxiety, and blood pressure.

- Strengthen teacher-student relationships with training and mentoring.

- Enforce anti-bullying policies and anonymous reporting systems.

- Use clustering to personalize support for at-risk student groups.

- Integrate predictive models into school monitoring dashboards for early alerts.