

Activity 2: Student Scoring Logic & Thresholds

Objective

The objective of this scoring system is to transform raw student data into standardized, interpretable performance indicators that mentors can easily understand and act upon. The framework evaluates students across academic performance, wellness, productivity, and career readiness using rule-based intelligence.

Rationale for Rule-Based Scoring

Rule-based scoring ensures transparency, consistency, and explainability. Each score is calculated using predefined formulas and thresholds, making the system suitable for mentoring and early intervention scenarios.

Feature Normalization

All numerical attributes are normalized to a 0–100 scale. This prevents any single feature from dominating the scoring process due to scale differences and allows meaningful weighted aggregation.

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Wellness & Wellbeing Score (WWS)

WWS captures physical and mental wellness by combining stress levels, sleep duration, and mental wellbeing indicators.

$$\text{WWS} = 0.4 \times \text{Stress Score} + 0.3 \times \text{Sleep Score} + 0.3 \times \text{Mental Wellbeing Score}$$

Productivity & Time Management Score (PTMS)

PTMS evaluates a student's ability to manage time and minimize distractions.

$$\text{PTMS} = 0.5 \times \text{Productivity Score} + 0.3 \times \text{Distraction Score} + 0.2 \times \text{Engagement Score}$$

Career Readiness Score (CRS)

CRS measures preparedness for career planning and skill acquisition.

$$\text{CRS} = 0.6 \times \text{Career Clarity Score} + 0.4 \times \text{Skill Readiness Score}$$

Student Readiness Index (SRI)

SRI is a composite indicator representing overall student readiness.

$$\text{SRI} = 0.3 \times \text{APS} + 0.25 \times \text{WWS} + 0.25 \times \text{PTMS} + 0.2 \times \text{CRS}$$

Readiness Category Thresholds

Students are classified based on SRI values as follows:

- Green ($\text{SRI} \geq 80$): High-performing students requiring minimal mentoring intervention
- Blue ($65 \leq \text{SRI} < 80$): Stable students benefiting from continuous guidance
- Yellow ($50 \leq \text{SRI} < 65$): Moderate-risk students

requiring targeted mentoring • Red ($SRI < 50$): High-risk students requiring immediate intervention

Threshold Justification

The thresholds are designed to reflect realistic academic environments, where the majority of students fall in mid-readiness categories, while a smaller proportion represent high-achievement or high-risk cases.

Updates

After identifying class imbalance in the original dataset, 30 additional data rows were intentionally added to improve class representation. These new records were generated within realistic feature ranges and aligned with the existing scoring logic, ensuring consistency while achieving a more balanced distribution across categories.

Conclusion

This rule-based scoring framework enables mentors to identify performance gaps, monitor wellbeing, and design data-driven interventions using transparent and interpretable metrics.