SUNWAY UNIVERSITY | Sunway BUSINESS SCHOOL

tender

WEB-BASED BURNOUT RISK PREDICTOR

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Tools & Techniques :

Problem

RISING NUMBER OF EMPLOYEES FACING BURNOUT

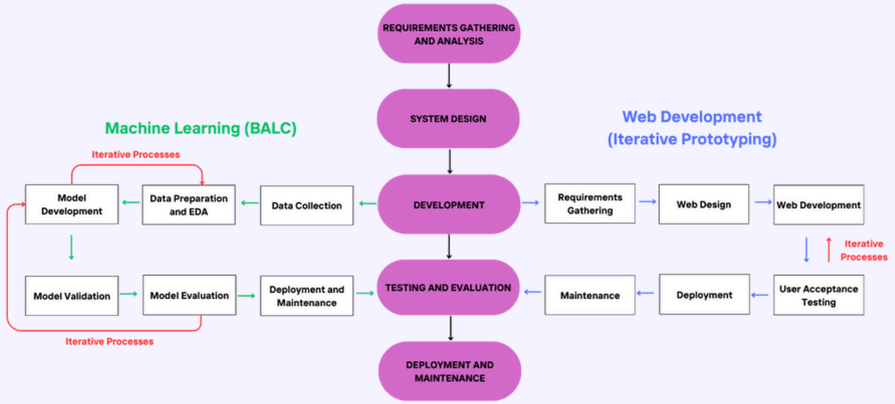
Solution

- MACHINE LEARNING
- WEB DEVELOPMENT
- DATA VISUALIZATION

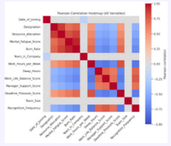
Limitations

- STATIC MODEL INTEGRATION
- SELF-REPORTED DATA CONSTRAINTS

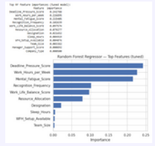
Project Life Cycle



Machine Learning



EXPLORATORY DATA ANALYSIS



FEATURE IMPORTANCE FOR EQUATION DEVELOPMENT

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=== RF Predicted Burn_Rate Quartiles (Thresholds) ===
Q1 (25%): 0.321
Q2 (50% / median): 0.464
Q3 (75%): 0.585

Suggested Risk Bands (based on RF predicted quartiles):
  Low burnout risk      : Predicted Burn_Rate ≤ 0.321
  Moderate burnout risk : 0.321 < Predicted Burn_Rate < 0.585
  High burnout risk     : Predicted Burn_Rate ≥ 0.585
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BURNOUT RISK THRESHOLDS

Validation

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CROSS-VALIDATED PERFORMANCE
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CV RMSE: 0.0531 ± 0.0005
CV MAE : 0.0409 ± 0.0005
CV R²  : 0.9288 ± 0.0019
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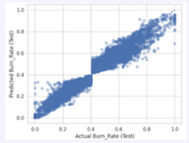
MODEL STABILITY AND VARIANCE

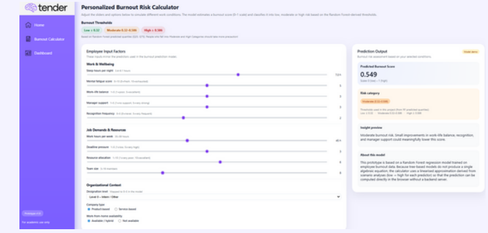


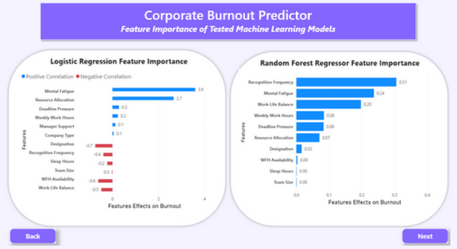
TEST FOR MODEL OVERFITTING

$$\overline{\text{Burn Rate}} = \alpha + w_1(\text{Deadline Pressure Score}) + w_2(\text{Work Hours per Week}) + w_3(\text{Mental Fatigue Score}) + w_4(\text{Recognition Frequency}) + w_5(\text{Work–Life Balance Score}) + w_6(\text{Resource Allocation}) + w_7(\text{Designation}) + w_8(\text{Sleep Hours}) + w_9(\text{WFH Setup Availability}) + w_{10}(\text{Team Size})$$

TEST FOR MODEL OVERFITTING

Web Development and Data Visualization





Impact on Community

HR DEPARTMENT

GAINS CLEAR VISIBILITY INTO EMPLOYEE BURNOUT RISK, ENABLING TARGETED WELLBEING AND PRODUCTIVITY PROGRAMMES.

UPPER MANAGEMENT

DEVELOPS STRONGER AWARENESS OF EMPLOYEE HEALTH, SUPPORTING INFORMED DECISIONS ON POLICIES, WORK HOURS, AND ORGANIZATIONAL DESIGN TO REDUCE TURNOVER AND PRODUCTIVITY LOSS.

EMPLOYEES

INCREASES BURNOUT AWARENESS AND MORALE, WHILE FEELING ACKNOWLEDGED AND SUPPORTED BY MANAGEMENT.