# BC2407 Project Proposal

Instructions: Fill up the boxes. Submit this word document into NTULearn > Class site > Team by the stated deadline. If there are major changes after submission, inform your instructor and re-submit.

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| BC2407 Class: | 3 | Team: | 8 |
| Name of Entity/Event[[1]](#footnote-2) | Human Resource Department | | |
| Preferred Wk of Presentation[[2]](#footnote-3) | 12 | | |

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| Project Title |
| [Tentative and can be changed later]  Analyzing Employee Retention: A Data-Driven Approach to Workforce Retention |

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| Background of the Case |
| [What’s the circumstances and background of the case?]  According to CNBC (2024), nearly 50% of employees are considering leaving their jobs in 2024 (Smith, 2024). The rise of remote work and hybrid job models has increased employee mobility, making retention strategies more critical than ever. Employee attrition is a significant challenge for companies, impacting productivity, workforce stability and financial costs. High turnover rate leads to:   * Increased recruitment expenses: with estimates showing that replacing an employee can cost 50-200% of their annual salary (Fox, 2023). * Loss of skilled employees: knowledge transfer gaps and loss of expertise disrupt business operations. * Disruption in business operations: Frequent turnover affects team dynamics, morale, and overall efficiency. * Reduced customer satisfaction – High attrition in customer-facing roles can lead to inconsistent service quality and client dissatisfaction.   Identifying key factors driving attrition can help companies develop effective retention strategies and minimize workforce stability. Key factors include: Education level, Environment satisfaction, Job involvement, Job satisfaction, Performance rating, Relationship satisfaction, Work-Life balance. |

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| Business Problem or Opportunity in the Case |
| [State the business problem or opportunity that had been or could be solved with Analytics. What did the business aim to achieve?]  The challenges caused by a high attrition rate could be minimized using analytics. The high costs of hiring and training new employees can be significantly reduced by understanding the root causes of employee turnover. Through data-driven analysis, businesses can identify patterns and trends that contribute to employee leaving and address them with targeted interventions.  Predictive analytics also allows HR departments to evaluate the possibility of specific employees leaving based on past data. This enables the company to take proactive efforts, such as tailoring retention programs, increasing employee engagement, and refining workplace policies to foster a more supportive environment.  Ultimately, the goal of using analytics in employee attrition management is to reduce turnover, lower recruitment costs, enhance workforce stability, and improve overall job satisfaction which will lead to greater business performance. |

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| Interestingness of the Case |
| It is interesting as it tackles on retaining talents, which is a major concern for organizations. The reason why it is a major concern is because it affects workforce planning, recruitment costs and business continuity.  High attrition rates lead to financial losses due to hiring, training, and knowledge transfer.  The dataset allows us to analyse key factors that contribute to employee turnover, helping HR managers make data-driven retention strategies.  The dataset contains both categorical and numerical features such as:   * Job Satisfaction * Work-life Balance * Distance from Home * Monthly Income * Job Role & Department   These variables help in building predictive models to identify which employees are at high risk of leaving.  We can apply techniques like Random Forest, Logistic Regression, and MARS to detect patterns in employee turnover.  The analysis can provide insights into which HR policies need improvement.  For example:   * If job satisfaction is a key factor, HR may introduce new benefits. * If long commute times lead to attrition, companies may offer remote work options. * The dataset helps translate numbers into actionable insights for improving employee engagement and retention. |

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| Data Sources |
| [Where will you get the data?]  IBM HR Analytics Dataset on Kaggle: [Link](https://www.kaggle.com/datasets/pavansubhasht/ibm-hr-analytics-attrition-dataset/data) |

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| Important References |
| [What are the important publications or prior analysis done? Sources?]   * Gartner reports on employee retention:   1. Highlights the high cost of turnover   2. Suggests the importance of Stay Conversation   3. Combining our machine learning model, we can identify employees(response) based on predictors who HR/Managers need to conduct Stay Conversation with. * Existing HR ML models |

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| Project Schedule |
| [Planned Timeline and milestones to be achieved.]   1. Data Cleaning &EDA: Recess Week 2. Model selections and implementation: Week 8 3. Model Evaluation and Insights: Week 8-9 4. Dashboard & Visualization: Week 9 5. Report & Presentation Preparation: Week 10 6. Final Submission: Week 11 7. Presentation: Week 12 |

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| Key Responsibilities |
| [State the Key Responsibilities of each Teammate.]  Code Check: Everyone  Timekeeper: Zhilan& YongLong  Team Meet up Scheduling: Xubin & Evelyn   1. Data Cleaning &EDA Xubin &Evelyn 2. Model Selection and implementation: all 3. Model Evaluation: 1-2 person per model 4. Model Insights: each person suggest 1-3 5. Dashboard& visualization: Zhilan & YongLong 6. Report: all 7. Slides: all 8. Presentation: all |

# References

Fox, A. (2023, December 21). Drive turnover down. SHRM. <https://www.shrm.org/mena/topics-tools/news/hr-magazine/drive-turnover>

Smith, M. (2024, May 8). Nearly 50% of people are considering leaving their jobs in 2024—more than during the “great resignation.” CNBC. <https://www.cnbc.com/2024/05/08/nearly-50percent-of-people-are-considering-leaving-their-jobs-in-2024.html>

1. Do not choose any organization in the exclusion list (unless instructor approves). See Appendix A & B in BC2407 Project Grading, Requirements and Guidelines.PDF. [↑](#footnote-ref-2)
2. All teams must submit project by the stated deadline. State your preferred wk to present project in class (if any). If there are too many requests for a specific wk (max 6), instructor may ballot and announce in NTULearn by wk 9. [↑](#footnote-ref-3)