Table of contents:

Key Definitions

Generative AI	AI Agent	Agentic AI
A field of artificial intelligence that leverages generative models to create output such as text, images, videos, and audio.	A system or program that uses artificial intelligence to independently perform specific tasks without assistance from human beings.	A field of artificial intelligence that focuses on the development of AI agents to get closer to creating artificial general intelligence.

Template

Initial Proposal Template

Project Title: AttriSense: Turning Data Into Care

Track Selection

Workplace productivity & Future of Work

Participant Information

Kindly email datawave2025@eskwelabs.com for any questions or concerns.

The deadline for the Initial Proposal in PDF format is July 15, 2025 11:59 PM. We will provide an Initial Submission Google Form so you can submit this document in PDF format there.

- **Team Name: The Owlgorithms**
- **Team Members:**
  - Name 1: Egenias, Kurt Aldrin C.
  - Name 2: Baita, Jhon Jeremie E.
  - Name 3: Fruto, John Mitchell M.
  - Name 4: Isais, Yohannez Solo O.
- **Contact email of Team Members:**
  - Email 1: s2023102026@firstasia.edu.ph
  - Email 2: s2023101508@firstasia.edu.ph
  - Email 3: s2023101186@firstasia.edu.ph
  - Email 4: s2023100492@firstasia.edu.ph

Project Overview

1. Problem Statement

In some BPO operations, where employee performance directly impacts customer satisfaction and operational KPIs, attrition and burnout are persistent challenges. The hybrid work environment makes it harder for HR and managers to detect early signs of disengagement or intent to leave. Current approaches are largely manual, reactive, and generic, failing to identify individual risk factors or actionable interventions in time. Additionally, there is growing concern about employee privacy, limiting intrusive monitoring as a solution.

2. Solution Description

AttriSense is a **predictive analytics and decision intelligence platform** designed to help operations proactively reduce employee attrition and burnout.

1. **Data Ingestion & Preparation:**
   - Uses existing **HRIS (Human Resource Information System) data** including demographics, job role, tenure, overtime, and performance records.
   - Preprocesses and encodes these features for ML model training.
2. **AI-powered Predictive Modeling:**
   - Trains **supervised machine learning models (e.g. Random Forest, XGBoost)** on historical data to learn patterns linked to employee resignations.

Kindly email datawave2025@eskwelabs.com for any questions or concerns.

The deadline for the Initial Proposal in PDF format is July 15, 2025 11:59 PM. We will provide an Initial Submission Google Form so you can submit this document in PDF format there.

3. **Risk Prediction:**
    - Generates **attrition risk scores for current employees**, identifying those with higher likelihood of leaving.
4. **Explainable Insights (XAI):**
    - Uses **SHAP (SHapley Additive exPlanations) explainability** to show *why* an employee is at risk (e.g. high overtime, no recent promotions).
5. **Personalized Recommendations:**
    - Maps insights to **targeted HR interventions**, such as role adjustments, workload redistribution, upskilling opportunities, or compensation reviews.
6. **User Interface (Streamlit Prototype):**
    - Provides HR and managers with an **intuitive dashboard** to view predictions, explanations, and recommended actions for each employee.

How does it empower MSMEs, promote fairness, or inspire action?

- Promoting fairness by ensuring employees are retained based on transparent, explainable insights rather than subjective judgment alone.
- Inspiring action by equipping HR teams with practical, personalized recommendations to care for employees proactively, reducing burnout and fostering a more supportive work culture.

Implementation Plan

3. Target Audience

Human Resources (HR) Managers

Role in the Organization: Oversee employee well-being, performance evaluation, and retention strategies.

Key Characteristics:

- Often mid-career professionals with backgrounds in business, psychology, or human resource development.
- Familiar with interpreting data but prefer tools that are user-friendly and visual.
- Manage a wide range of responsibilities and are constantly seeking ways to improve efficiency and reduce manual work.

- Highly concerned with employee morale, turnover rates, and compliance with data privacy regulations.

- Interested in early indicators of disengagement or burnout to enable timely intervention.

People Analytics or Workforce Strategy Specialists

Role in the Organization: Use data to identify patterns in workforce behavior and inform HR decision-making.

Key Characteristics:

- Skilled in analyzing trends across departments, locations, and demographics.

- Prefer predictive tools that offer transparency, accuracy, and ethical alignment.

- Act as key advisors to HR leadership on how to align people's data with organizational goals.

- Advocate for evidence-based decision-making in hiring, retention, and development.

- Look for customizable, scalable, and privacy-conscious solutions.

(Identify the primary users of your solution and describe their characteristics.)

4. Key Metrics for Success

Prediction Accuracy (Model Performance Metrics)

- **Precision, Recall, F1 Score, AUC-ROC**: Measures how accurately the model predicts employee attrition or burnout risk.

- **Early Warning Rate**: The proportion of at-risk employees identified before signs of disengagement become apparent.

User Engagement (HR & Managerial Use)

- **Adoption Rate**: Number/percentage of HR or team leads actively using the system.

- **Dashboard Interaction Frequency**: How often users log in, interact with insights, or export reports.

- **Feedback Score from Users**: Survey results measuring the system's perceived usefulness and ease of use.

Operational Efficiency Gains

- **Reduction in Time to Identify At-Risk Employees**: Comparison of manual vs. AI-assisted identification speed.
- **Decrease in Reactive HR Interventions**: Lower need for emergency interventions due to earlier detection.

Impact on Retention and Well-Being

- **Change in Attrition Rate**: Reduction in employee turnover in pilot groups using the tool.
- **Employee Satisfaction Score**: Improvement in internal pulse surveys or eNPS (Employee Net Promoter Score).
- **Burnout Risk Score Trends**: Decrease in average burnout indicators after proactive HR measures.

Ethical Compliance & Transparency

- **Privacy Breach Incidents**: Zero tolerance metric for unintended data exposure.
- **Explainability Rate**: Proportion of predictions with human-understandable explanations (using SHAP or LIME).
- **Consent Opt-In Rate**: Number of employees voluntarily agreeing to ethical monitoring based on transparency.

(List the metrics you will use to measure the success of your project. Consider factors like user engagement, financial impact, or social outcomes.)

Technical Details

5. Technology Stack

1. Programming Language

- **Python -** For data preprocessing, machine learning model development, and explainable AI integration.

2. Machine Learning Libraries

- **Scikit-learn -** For basic ML models (Logistic Regression, Decision Tree, Random Forest) and preprocessing.
- **XGBoost -** For advanced, optimized tree-based classification models with high

accuracy.

3. Data Analysis & Visualization

- **Pandas** - Data loading, cleaning, and manipulation
- **NumPy** - Numerical operations and array management
- **Matplotlib & Seaborn** - Data visualization for EDA and feature analysis

4. Explainable AI Tools

- **SHAP (SHapley Additive exPlanations) -** For model interpretability and explaining feature contributions to individual predictions.

5. Handling Class Imbalance

- **Imbalanced-learn (imblearn) -** For SMOTE oversampling to balance the attrition dataset classes.

6. Deployment & UI Prototype

- **Streamlit -** To build a simple interactive web app for HR to input employee data and view predictions, explanations, and recommendations.

7. Development & Collaboration Platform

- **Google Colab / Jupyter Notebook -** For rapid development, model experimentation, and sharing notebooks with the team.

8. Version Control & Project Management

- **GitHub -** For version control, code management, and team collaboration.

Optional Tools (if time allows)

- **Dash / Plotly** - For advanced dashboards (alternative to Streamlit).
- **Docker** - For containerizing the app for scalable deployment in production environments.

6. Data Requirements

Existing Data Source - **IBM HR Analytics Employee Attrition Dataset** *(publicly available on Kaggle)*

- Employee demographics, Job information, Employment history, Compensation, Work conditions, Satisfaction metrics, Performance metrics and Target variable**:** Attrition (Yes/No)

Additional Information

7. Challenges and Risks

A key challenge in this project is the **unpredictable nature of human behavior**, as employee decisions to leave can be influenced by personal circumstances not captured in HR data, limiting model accuracy. Additionally, there is a risk of **algorithmic bias**, as models trained on historical data may reflect existing inequities in promotions or compensation. **Data privacy and consent** are critical concerns, as employee information is sensitive and must be handled securely, ensuring use only with proper consent and for intended purposes. To mitigate these risks, we will use **Explainable AI (XAI) to ensure transparency**, apply **fairness checks to detect bias**, and **strictly rely on anonymized, consented organizational data** while continuously updating models with new data to adapt to changing employee patterns and avoid static or biased assumptions.

Reminders

July 15, 2025 at 11:59 PM - Submission of initial proposal (PDF format)

Kindly fill in this template, download as PDF and submit it on or before the deadline. The deadline for the Initial Proposal in PDF format is July 15, 2025 11:59 PM. We will provide an Initial Submission Google Form so you can submit this document in PDF format there.

August 25, 2025 at 11:59 PM - Submission of final proposal (Video presentation of project, slide deck used or demo links used in video presentation, and project paper containing documentation)

More info on the video duration and rubrics will be shared after July 15, 2025.

Challenge Statements per track

Track 1: Digitalization

Focus: Autonomous agents that digitize and optimize core banking processes, from product development to service delivery. Solutions should demonstrate how AI agents can independently manage digital transformations, automate system integrations, and accelerate innovation cycles within BPI's existing technology stack.

Challenge statements to choose from:

- Market Research: AI for Dynamic Product Prototyping and Market Simulation - Banks lack rapid, intelligent prototyping tools to simulate market reactions

and refine financial products, resulting in long innovation cycles, low hit rates, and missed opportunities in fast-evolving digital markets.

- **Digital Trust: AI for Risk-Based Authentication (RBA) With Zero-Trust Principles** - Banks lack adaptive, behavior-based authentication mechanisms that can detect anomalous behavior and enforce access decisions in real time, undermining zero-trust strategies and exposing the organization to sophisticated identity threats.
- **Digital Twin: AI-Powered Digital Model for Branch Network and Customer Flow Simulation** - Banks lack real-time, dynamic, simulation tools to optimize customer flow, resource allocation, and spatial layout in branches, leading to inefficiencies, degraded experiences, and underutilized physical assets.

Track 2: ESG+E2: Financial Inclusion and Sustainable Business Growth

Focus: Agentic AI systems that autonomously identify and serve underbanked populations while ensuring sustainable business practices. Solutions should leverage alternative data to make independent lending decisions, automatically assess ESG compliance, and scale financial inclusion efforts without proportional increases in operational costs.

Challenge statements to choose from:

- **E: AI for Green Finance & ESG-Aligned Product Innovation for Retail Customers** - Retail banks lack the tools and data-driven frameworks to design, test, and personalize ESG-aligned products that resonate with sustainability-conscious consumers, resulting in missed engagement opportunities and failure to meet evolving regulatory and market expectations.
- **S: AI Agents for Ethical Microfinance Lending (S + Financial Inclusion)** - Traditional microfinance models are too rigid, manual, and costly to scale, excluding high-potential borrowers and delaying access to capital in underserved markets where it's most urgently needed.
- **G: AI for Evaluating and Monitoring ESG Alignment of SMEs (E+S+G)** - Banks want to encourage ESG-aligned behavior among SMEs, but lack transparent, auditable, and nuanced tools to assess ESG alignment across supply chains. This leads to continued unsustainable practices and failure to identify ESG-aligned SMEs that can be financed.

Track 3: Hyper-Personalization and Customer Experience

Focus: AI agents that independently orchestrate personalized customer journeys, predict and resolve issues proactively, and optimize engagement strategies in real-time. Solutions should demonstrate autonomous decision-making that enhances customer satisfaction and drives measurable business outcomes.

Challenge statements to choose from:

- **Customer Experience: Sentiment-Aware Multi-Channel CX Orchestration** - Banks lack a unified, sentiment-aware orchestration layer across multiple

channels and touchpoints, resulting in emotionally tone-deaf interactions, inconsistent service, and missed moments of empathy that drive loyalty.

- **Customer Service: AI Agents for Proactive Issue Resolution** - Customer service systems lack proactive, autonomous capabilities to detect and resolve emerging issues in real time, leading to delayed resolutions, higher support costs, and erosion of customer trust.
- **Product Modeling: AI-Driven Financial 'What-If' Sandbox with Explainable Outcomes -** Customers and advisors lack accessible, explainable simulation tools to evaluate the consequences of financial decisions, resulting in uncertainty, missed opportunities, and underutilization of advisory services.

Track 4: Workplace Productivity and Future of Work

Focus: Autonomous systems that augment employee capabilities by independently managing routine tasks, generating actionable insights, and facilitating cross-functional collaboration. Solutions should show clear productivity gains and operational efficiency improvements within BPI's work environment.

Challenge statements to choose from:

- **Computer Vision: Augmenting Employee Capabilities Through Computer Vision** - Many traditional banking operations are characterized by reactive monitoring and manual review. This approach, often lacking significant support from modern-day computer vision, can be resource-intensive and less effective in optimizing day-to-day operations, proactive threat detection, or fraud prevention.
- **Behavioral Patterns: Predictive Employee Well-Being & Retention AI (Ethical Monitoring)** - Financial institutions struggle to detect early signs of potential burnout or attrition risk in hybrid work environments, leading to preventable turnover and disengagement, while navigating critical concerns around privacy and ethical monitoring.
- **Semi-Autonomous Orchestration: AI-Powered Decision Intelligence** - Banks are under pressure to boost efficiency while ensuring compliance and trust. Many routine, low-risk processes, like document checks and transaction approvals, are still manual, causing delays and resource strain. Semi-autonomous systems can streamline these workflows by automating predictable decisions, with human oversight for exceptions.

Track 5: Synergies and Ecosystem Collaboration

Focus: Agentic AI that autonomously manages partnerships, compliance monitoring, and risk assessment across banks' ecosystems of vendors, regulators, and Ayala group companies. Solutions should demonstrate independent coordination and value creation through intelligent automation of inter-organizational processes.

Challenge statements to choose from:

- **AI for Improving Inter-Departmental Synergies in BPI -** Traditional banks' internal processes for compliance, risk assessment, and strategic coordination tend to be manual and siloed, resulting in slower innovation

cycles, increased operational complexity, and limited agility in responding to evolving financial needs.

- **AI for Improving Synergies between BPI and Other Ayala Companies -** Inter-company collaboration is often affected by fragmented systems and inconsistent data flows, making it difficult to align on shared compliance, co-develop financial solutions, and deliver integrated services that benefit communities.
- **AI for Improving BPI's Ecosystem Synergies -** Banks' ecosystems of vendors, suppliers, fintech partners, and regulators often face coordination challenges due to disconnected workflows and limited visibility, leading to inefficiencies, slower innovation, and reduced trust across inter-organizational relationships.