**About the Customer:** American Bird Conservancy (ABC) is dedicated to conserving wild birds and their habitats throughout the Americas. With an emphasis on achieving results and working in partnership, ABC takes on the greatest problems facing birds today, innovating and building on rapid advancements in science to prevent bird extinctions, reverse bird population declines, reduce threats to all birds, and build the bird conservation movement.

**Challenge:** Predict project priority for ABC to optimize impact based on bird risk levels, bird population density, and associated conservation costs. Hints:

1. A habitat is the natural environment in which a tree or bird thrives, while a reserve is a protected area that safeguards a habitat and its ecosystems. How might you integrate various types of data provided to you?
2. A conservation project involves numerous activities. How could you identify and predict the priority of a project based on these activities?
3. Activities aimed at preserving trees play a crucial role in protecting bird populations. How can you effectively map these activities to bird risk data in Avian Conservation Assessment Database (ACAD)? Be sure to review all the fields in the ACAD data and familiarize yourself with their meanings.

**Learning Objectives**

* Handle complex datasets with null values, outliers, non-numeric field types, and other anomalies.
* Evaluate effectiveness of models and select ones that best fits the problem statement.
* Core Machine Learning concepts, including pre-processing data, training and optimizing for metrics, model evaluation, and model selection.

**Input Sources**

1. Avian Conservation Assessment Database (ACAD): A condensed version of the publicly available data ABC uses through ACAD to determine risk levels for bird species.
2. Conservation and Grant Database: Labeled dataset to measure conservation efforts and keep track of grants, projects, and activities.

Additional details below.

**Judging Criteria**

1. Model performance metric in the test dataset (Output)
2. Presentation detailing your approach, data split, setting up of the experiment, using visualization tools such as graphs and charts

If your project is selected among the top 10 solutions, your team will be asked to provide code artifacts (for example, Jupyter notebook).

**Submission Criteria**

1. Presentation slide deck for your AI solution
2. Model evaluation metrics

**Additional Details**

1. Data Science Service (DSS) instructions for the Hackathon can be found [here](https://confluence.nsgbu.netsuitecorp.com/display/NSAI/Instructions+for+AI+Hackathon+-+Classical+AI+challenge%2C+2024).
2. If you are new to DSS, and need help getting started, please refer to the resources below:

* [Instructions for Self-Service Machine Learning Labs](https://confluence.nsgbu.netsuitecorp.com/display/NSAI/Instructions+for+Self-Service+Machine+Learning+Labs)
* [Past hands-on lab events](https://confluence.nsgbu.netsuitecorp.com/display/NSAI/Hands-on+Labs+2024) (recordings, presentations, etc.)