

# MSiA 423: Cloud Engineering For Data Science

## Assignment - 3

### Individual Assignment (100 points)

#### Topics

ML application deployment  
Unit Testing, Logging, Error Handling  
A/B capabilities

#### Assignment Overview

The objective of this assignment is to build upon the previous assignment, where you deployed a machine learning model training process to the cloud. You will take the trained models from the cloud and deploy them as a web application using Streamlit. Additionally, you will implement multiple versions of the model, allowing users to choose which version they would like to run.

#### Steps:

1. Retrieve the trained machine learning models from the cloud storage or any other source you used for the previous assignment. Ensure that you have at least two versions of the model available for deployment.
2. Set up a Streamlit-based web application that will serve as the interface for running the models. Streamlit is a Python library used for building interactive web applications for data science and machine learning tasks.
3. Design a user interface that allows the user to select the version of the model they want to run. You can use dropdown menus, radio buttons, or any other suitable method for user input. Ensure that the UI is intuitive and user-friendly.
4. Implement the functionality to load the selected version of the model into the web application. When a user selects a particular model version, the corresponding model should be loaded into memory.
5. Once the user selects a model version, implement the functionality to perform predictions using the loaded model. Display the predictions or any relevant output on the web application interface.
6. Allow users to switch between different model versions within the web application. Provide a mechanism for dynamically loading the selected model version without restarting the application.
7. Implement appropriate unit testing, logging and error handling mechanisms in case of model loading failures, input errors, or any other potential issues that may arise during the web application's usage.

**Deliverables:**

1. Deployed Web Application: Provide the deployed web application URL where users can access and interact with the application.
2. Source Code: Submit the complete source code of the web application, including any necessary files and dependencies.
3. Documentation: Submit clear and concise documentation that explains how to run the web application, how to select different model versions, and any other relevant instructions.

**Rubric:**

Your assignment will be evaluated based on the following criteria:

1. Successful deployment of the web application.
2. Implementation of multiple versions of the model for user selection.
3. User-friendly interface design.
4. Proper model loading and prediction functionality.
5. Robust error handling and validation.
6. Code comments quality and clarity.