NYC DATA SCIENCE ACADEMY

Machine Learning Project Rubric

Use this rubric as a guide to completing a successful machine learning project. These are the criteria the instructors will use to evaluate your project.

	Excellent (A) **5 points** Exceeds expectations	**Good (B)** **4 points** Meets expectations	**Fair (C)** **3 points** Meets lowest acceptable standards	**Poor (F)** **1 point** Doesn't meet acceptable standards
Project Submission Criterion related to timely submission and presentation of the project. **Weight: 10%**	Project presented on time, presentation shared correctly, code is hosted on GitHub repository, and there is strong evidence of version control.	Project presented on time, presentation shared correctly, code is hosted on GitHub repository, but there is no evidence of version control.	Project presented on time, but presentation not shared, and code not hosted on GitHub repository.	Project not presented on time, no presentation shared, and code not hosted on GitHub repository.
Exploratory Data Analysis Criterion related to the exploration of the provided data. **Weight: 20%**	Learned methods used to exhaustively explore the dataset. Techniques used to understand and interpret implications and relevance of different features.	Learned methods used to explore the dataset. Techniques used to understand implications and relevance of different features.	Learned methods used to explore the dataset to some degree. Techniques used mostly unsuccessfully to understand implications and relevance of different features.	Learned methods used to explore the dataset to a minimal degree. No techniques used to understand relevance of different features.
Data Cleaning/ Feature Engineering Criterion related to data manipulation and transformation. **Weight: 15%**	Data is manipulated in a way that is considerate of the domain objective and to better satisfy model assumptions to improve and/or stabilize model performance. Transformations are implemented where appropriate. New features are introduced in a way that is logical.	Data is manipulated in a way that is somewhat considerate of the domain objective and to better satisfy model assumptions to improve and/or stabilize model performance. Some transformations are implemented where appropriate. Some new features are introduced in a way that is logical.	Data is manipulated, but may not achieve the goal of better satisfying model assumptions to improve and/or stabilize model performance. Few transformations are implemented and may not be appropriate. New features are introduced but in a way that is not obviously logical.	Data is barely manipulated and the work does not achieve the goal of better satisfying model assumptions to improve and/or stabilize model performance. No transformations or new features are implemented.

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Model Selection/ Validation Criterion related to the selection and validation of models used.. **Weight: 20%**	A wide variety of model types are attempted. Models are correctly validated using techniques taught in the coursework. Hyperparameters are tuned to a reasonable range using techniques taught in the coursework.	Numerous model types are attempted. Models are correctly validated using techniques taught in the coursework. Hyperparameters are mostly tuned to a reasonable range using techniques taught in the coursework.	Few model types are attempted. Models are sometimes validated, sometimes incorrectly, using techniques taught in the coursework. Hyperparameters are not tuned or tuned to innapropriate values.	No successful models produced or models are implemented incorrectly. No model validation or the validation of the model is misinterpreted. No hyperparameter tuning.
Outcome Criterion related to the outcome of the project. **Weight: 20%**	Model performance is summarized in a clear and accurate way (training and test error are clearly shown). Logical interpretation of model results. Inferential components included in project conclusion (suggestions for home-owners who are looking to increase the value of their home).	Model performance is summarized in an accurate way (training and test error are shown). Mostly logical interpretation of model results. Some sort of real-world application of the findings is exhibited.	Model performance is vaguely summarized. Interpretation of model results may be incorrect. No real-world application of the findings is exhibited.	Model performance is not summarized either due to unsuccessful model implementation or omission of the results. Interpretation of model results is incorrect. No real-world application of the findings is exhibited.
Presentation Criterion related to the presentation of the project. **Weight: 15%**	Students effectively present their machine learning workflow in a logical and easy-to-follow way. Visualizations used effectively convey the intended messages. Presentation clearly indicates that time was dedicated for development and practice of the presentation. Work is clearly distributed among students.	Students present their machine learning workflow in a logical way. Visualizations used mostly convey the intended messages. Presentation indicates that some time was dedicated for development and practice of the presentation. Work is clearly distributed among students.	Students present their machine learning workflow in a way that is difficult to follow. Visualizations used have difficulty conveying the intended messages. Presentation indicates that minimal time was dedicated for development and practice of the presentation. Work is clearly distributed among students.	No presentation or work is clearly dominated by one or two students.

Note: This criterion may be used at the instructor's discretion to alter the overall grade of the project. These categories are designed to help guide students to follow common best practices and produce high quality code.

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Code (For Discretionary Consideration) Criterion related to the usage of proper coding techniques and practices.	Code is organized into scripts, each with a clear purpose, and are given meaningful file names. Sufficient commenting/docstring is used to describe the functionality of the code. In Jupyter Notebooks, markdown is used to partition the code into logical sections. Code is modular, robust, efficient and demonstrates an understanding of best practices (such as using helper functions). Code has no syntax errors and follows the standard formatting style.	Code is organized into scripts, each with a vague purpose. Some commenting is used to describe the functionality of the code. In Jupyter Notebooks, markdown is used occasionally to partition the code into sections. Code is somewhat robust and efficient but has room for improvement. Code may have minor syntax errors and mostly follows standard formatting style.	Code is not organized into scripts. Minimal commenting is used to describe the functionality of the code. In Jupyter Notebooks, markdown is not used to partition the code into sections. Code is repetitive and inefficient. Code has several syntax errors and often ignores standard formatting style.	Code does not run successfully, and no commenting is used to describe the functionality of the code. Code is riddled with syntax errors and completely ignores standard formatting style.