UDACITY

‹ Back to Machine Learning Engineer Nanodegree

Machine Learning Capstone Project

REVIEW

CODE REVIEW

HISTORY

Meets Specifications

🏆 Great job completing the capstone project! Deep learning is quickly becoming software 2.0, so it's great that you're getting more practice with using it for real world problems like this.

And if this is your final step to complete the nanodegree program, congratulations and best of luck with whatever projects you work on next! 😎

Definition

Student provides a high-level overview of the project in layman’s terms. Background information such as the problem domain, the project origin, and related data sets or input data is given.

Good introduction to your ML project and providing background information on the LSST classification problem.

This problem is definitely a good fit for a solution using machine learning, and deep learning specifically. 😄

The problem which needs to be solved is clearly defined. A strategy for solving the problem, including discussion of the expected solution, has been made.

Metrics used to measure performance of a model or result are clearly defined. Metrics are justified based on the characteristics of the problem.

Great work describing the confusion matrix

Great work describing the confusion matrix analysis used to evaluate the model's performance.

For future reference, you can also check out these posts on regression metrics and classification metrics.

Analysis

If a dataset is present, features and calculated statistics relevant to the problem have been reported and discussed, along with a sampling of the data. In lieu of a dataset, a thorough description of the input space or input data has been made. Abnormalities or characteristics

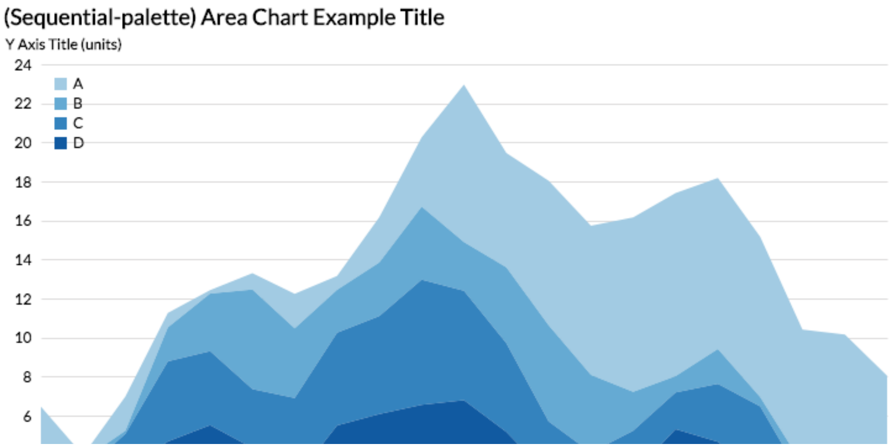
about the data or input that need to be addressed have been identified.

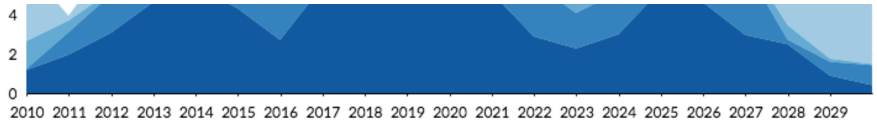
A visualization has been provided that

A visualization has been provided that summarizes or extracts a relevant characteristic or feature about the dataset or input data with thorough discussion. Visual cues are clearly defined.

Excellent job discussing the dataset and including the various visualizations to show some important characteristics of the data — this is definitely one of the more comprehensive data exploration sections I've seen in a capstone. 😎

For future visualization ideas, you can also look into tools like these: Altair, Bokeh, chartify.





- https://altair-viz.github.io/gallery/index.html

Algorithms and techniques used in the project are thoroughly discussed and properly justified based on the characteristics of the problem.

Good job including a discussion of the CNN modeling techniques used. Kudos!

If interested, you can also see the Kaggle data science glossary for examples of various ML

models and approaches:

- https://www.kaggle.com/shivamb/data-science-glossary-on-kaggle

Student clearly defines a benchmark result or threshold for comparing performances of solutions obtained.

Methodology

All preprocessing steps have been clearly documented. Abnormalities or characteristics about the data or input that needed to be addressed have been corrected. If no data preprocessing is necessary, it has been clearly justified.

The process for which metrics, algorithms, and techniques were implemented with the given datasets or input data has been thoroughly documented. Complications that occurred

during the coding process are discussed.

Great job describing the implementation and documenting refinements you made with the network architecture. You definitely put in some work here to generate the solution. 😅

- In general it's a good idea to record the results of all your model training experiments, especially "failures" that might need to be debugged. You can learn more about this and other thoughts from google in their effective ML guidelines.
- And you could also look into using early stopping to do hyperparameter tuning with Hyperband.

The process of improving upon the algorithms and techniques used is clearly documented. Both the initial and final solutions are reported, along with intermediate solutions, if necessary.

Results

The final model's qualities — such as parameters — are evaluated in detail. Some type of analysis is used to validate the robustness of the model's solution.

Good job evaluating your final model results, and also examining the solution with the learning curve plots and benchmark comparisons. 😎

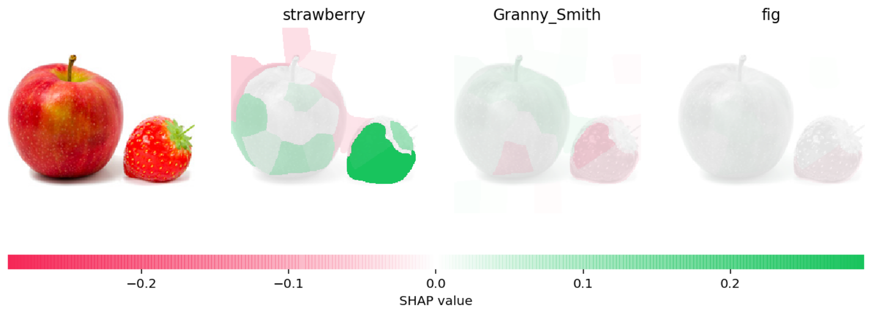
The final results are compared to the benchmark result or threshold with some type of statistical analysis. Justification is made as to whether the final model and solution is significant enough to have adequately solved the problem

the problem.

Conclusion

A visualization has been provided that emphasizes an important quality about the project with thorough discussion. Visual cues are clearly defined.

If you're interested in visualizations that can help with model interpretability, you can also check out techniques such as LIME (Local Interpretable Model-agnostic Explanations) or SHAP (SHapley Additive exPlanations).



Student adequately summarizes the end-to-end problem solution and discusses one or two particular aspects of the project they found interesting or difficult.

Discussion is made as to how one aspect of the implementation could be improved. Potential solutions resulting from these improvements are considered and compared/contrasted to the current solution.

Excellent job reflecting back on your experience with the project and discussing improvements that could be made with different network architectures or using RNN/LSTM modeling.

You've clearly expanded your skills beyond the core concepts introduced in the MLND and are ready to tackle new problems like this with deep learning and ML. 😀

Quality

Project report follows a well-organized structure and would be readily understood by its intended audience. Each section is written in a clear, concise and specific manner. Few grammatical and spelling mistakes are present. All resources used to complete the project are cited and referenced.

Code is formatted neatly with comments that effectively explain complex implementations. Output produces similar results and solutions as to those discussed in the project.

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