InstinctiveML

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Abstract: InstinctiveML enables developers with limited machine learning expertise to train high-quality models specific to their business needs. Build your own custom machine learning model in minutes.
InstinctiveML brings the intuition of the concept of building and deploying Machine Learning models through an uncomplicated UI, easy to use methodology and a tranquil workflow.

InstinctiveML uses a standard machine learning workflow:

- Gather your data: Determine the data you need for training and testing your model based on the outcome you want to achieve
- Prepare your data: Make sure your data is properly formatted before and after data import
- Train: Set parameters and build your model
- Evaluate: Review model metrics
- Test: Try your model on test data
- Deploy and predict: Make your model available to use

IndexTerms **– Machine Learning, Neural Network, Prediction & Analysis.**

I. INTRODUCTION

The approach of so called “Machine Learning” has enabled conspicuous and significant progress over the past decade on various areas, such as image scrutiny, computer vision (cv), natural language processing, artificial intelligence applications, augmented reality, quantitative finance, etc. Thus, an overview of Machine Learning algorithms from conventional Machine Learning to Deep Learning then to Automated Machine Learning (AutoML) has been brought to make prediction and analysis of dataset closely transparent in work field.

The all new, up to the minute clone of Cloud AutoML, also named as “InstinctiveML” has been brought into the spotlight for a major number of primary reason of concerns. This includes all the explicit ease which are to be maintained for one to indulge various machine learning architectures into one single handed software.

The project’s foundation relies on four main pillars also known as the backbone of the InstinctiveML:

1. Front end services pertaining to either of the Frameworks (ReactJS)
2. Http request monitoring
3. Data scrapping cron
4. Data training model cron

Machine Learning (ML), which consciously serves as the fundamental assets of data science also artificial intelligence, has being studied and explored by more and more people across the globe, including students, working professionals and researchers. This is a very appealing area to explore even further for often combined with other areas such as statistics and biology, and in the lately decade, Machine Learning has been significantly and substantially used throughout computer science and beyond. Machine Learning is applied in computer vision, natural language processing, quantitative finance and many other applications of human era aspects of interests. Thus, it has given us a glimpse of the high potential of AI.

II. DATA, AUTHENTICITY AND ORIGIN

In the past 20 years of software and technological development, conventional Machine Learning community wasn’t too much aware of "smart" or "cognitive" approaches, but rather devoted on the introduction of statistics, mainstream and data analysis and processing, with Supervised Learning of datasets and Unsupervised Learning.

Supervised Learning:
Supervised Learning focusses to get the optimal model under a certain criterion, through training the existing training sample with known input denoted by the corresponding output denoted by (with label). The goal is to obtain an optimal model through training existing examples of explicit datasets, where the known inputs correspond to outputs, so that the unknown data can be classified and obtained by this model. Typical methods of Supervised Learning are elaborated with references:
K-Nearest Neighbor (KNN) and Support Vector Machine (SVM). 2.1.1. K-Nearest Neighbor. K-Nearest Neighbor (KNN) is one of the most fundamental yet simplest classification methods of all times. It is usually used as the initial or prior choices for a classification purposes and hence it has been adopted by us, the developers, as a primary route to destination. It is still the most

widely used for facial recognition, movie/music recommendation systems, detection of diseases, etc., when the distribution of the data is unknown to us. This method only determines the categorical grouping of the sample to be subdivided further according to the category of the nearest one or several samples. Researchers proposed a KNN model-based approach that achieved competitive performance on the datasets above compared with previous C5.0 and the KNN method, with higher classification accuracy than the standard KNN by reducing the dependency of known variables. It is suitable for a few rare event classification and multi-classification problems. However, an obvious disadvantage of KNN is the time complexity of making predictions and grouping the output. For the dataset with large sample capacity and volume, the calculation amount is relatively large as well. Besides, the dependency on the selection of a proper affects its efficiency as well. In the beta upgrades there might immerge a chance of indulging k-means, dimensionality reduction algorithm also coupled with SVM.

3.3 PRODUCT FRAMEWORK

The most immature or under-developed version of Deep Learning is Artificial Neural Networks, a subfield of Machine Learning that attempts or tends to mimic the human brain or functionality and automatically extract data features through more complex structures.

Before the development of Deep Learning and other intriguing approaches, although Machine Learning had been developed for decades, there were still many problems that could not be solved by Artificial Intelligence for it lacks the human manipulation and decision drafting schemes for numerable reasons, such as image classification, natural language processing, computer vision etc. This is because conventional Machine Learning techniques are limited in their ability to process raw or large amounts of data. The existence of Deep Learning solved some problems in these fields although the modern era has equipped itself with a huge potential.

- InstinctiveML uses FAST API which open API specifications and creates user documentation for GET | POST etc. by itself. It also keeps a track of the code snippet, classes and strings within dataset. How easy could life get so far.
- Redoc provides responses to each of the respectively pulled requests.
- Curl command can be used to convert the base platform.

(The code can be converted to Java code by using curl command to implement a mobile application).

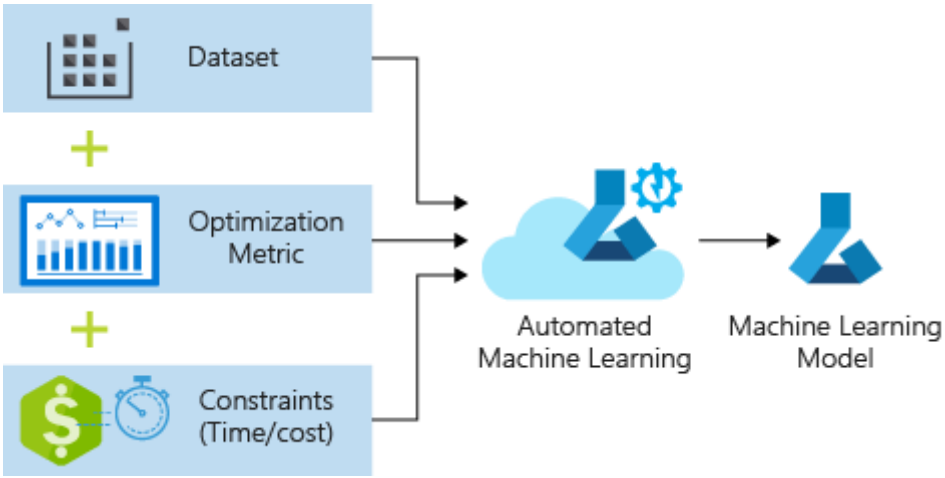
It also provides API request end point, headers, content type, result format in terms of probability and much more to gain insights in.

- View models:

1. Dataset alteration, cleaning & overlook
2. Architecture selection
3. Image size selection
4. Epoch selection range

The actual business may have customized requirements for the actual machine learning process, for example, for which only a certain type of data processing tool can be used. Such requirements cannot be met in the current black box InstinctiveML solution. Whether it is effective or efficient, InstinctiveML has a lot of room for improvement.

- Pass the data to InstinctiveML and it should tell us relationship of each variables to target variable (trying to predict).
- Full feature engineering (NLP feature engineering in must because that requires lots of work
- Feature selection (picking the features most suitable for given problem)
- Model selection, which model works best for your problem, that is already there pretty much in all the platform around InstinctiveML
- Data formatting, very hard but already turning data frames to sparse matrix also like one encoding.



The future of InstinctiveML will be a system that can handle following:

- -Pre-process the data, perform automatic cleaning.
- -Does feature engineering and select and construct the best features.
- -Select the model appropriately.
- -Select the model hyper-parameters.
- -Analyse and tune the results.

3.3 CONCLUSION

This paper presented an explicit overview of the development and distinct algorithms of Machine Learning indulged as "InstinctiveML", consisting of following: Conventional Machine Learning, Deep Learning, and Cloud AutoML. From the first section, we can see that some conventional ML algorithms are still productive and still provides substantial results even when their origination is quite ancient if compared to today's technological fields. From the second section, we can conclude that Deep Learning methods, including CNN and RNN, are more widely and most commonly approaches used and perform much better than conventional methods in image classification and natural language processing through enhanced architectural definition. In the third section, AutoML significantly proves to be the back bone of the concept of implementation of "InstinctiveML" also, Beta integration could be initiated as soon as the productivity comes to its prime. In the future, more researches will focus on this area to design more efficient algorithms and accelerate the applications to solve real-world issues namely as video-graphic detection and analysis of the same. Moreover, the increasing requirement of hardware for strong computing power could also be the research emphasis in both academic and industry field.
InstinctiveML approaches are already mature enough to rival and sometimes even outperform human machine learning experts

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