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Neural Machine Translation and Artificial Intelligence

Uday Nath Pandey
UG student
Department of Computer Engineering

Mr.P.S.Hanwate
Assistant Professor
Department of Computer Engineering

NBN SINHGAD SCHOOL OF ENGINEERING, AMBEGAON (BK), PUNE.

Abstract

This paper aims to show the artificial intelligence's effect on MT (machine learning) on language translators. The latest development around the neighboring areas the latest development in the field of A.I. in the current era of technology has been accepted quietly opposite of positive way by many translators, they think that job they have and at the status at which they are in the society are intimated by machines. But, according to the survey, this fear should not be present among them, as the number of work losses because of everything being controlled by machine would not be larger than the job created by the new ones where new expertise would be needed. The Moto of the latest job is, analyzing the development of automation in the field of machine translation (MT) by accessing the production of various MT tools, namely DeepL, Google Translate, Systran and Amazon Translate, in the conversion of few lines of code of text accepted by a random or general website. Practical instances show the development of NMT (neural machine translation) – the robustness of the ML(machine learning) foundations is provided by it– it has been analyzed that the most important thing in translation is nothing but our effect, even after the excellent result of NMT neural machine translation tools. It has been analyzed that machine /language translators must rely on automation in the form of assistance in their respective work, as it permits those people to be quick and, hence, even further efficient and productive. The crucial benefits provided by NY(neural translation) is that it provides room for additional developing and less boring works, leveraging the translators' output gives to the tasks where our mind can improve.

INTRODUCTION

Machine translation or unmanned conversion of the source language to the target language is maybe mostly a part of demanding A.I.(artificial intelligence) activities provided the ability of language used by us humans. About two or decades ago, systems that were based on the rules were utilized considering these activities, but they were mostly switched with numerical methods. Lately, deep neural network models attained modern outcomes in an area that is acceptably known as NMT(neural machine translation).

During this process of MT(machine translation) task, the data given contains a succession of symbols in some particular dialect called the source language, and the computer containing some set of instructions must translate this into a succession of symbols in other dialect called as a target language.NMT (Neural machine translation) is a method or process to translate source language to target language. For instance, converting the French language to the Hindi language. Suppose if someone was in an Indian village where generally most of the public do not know and understand English. And he wants to communicate comfortably with the villagers. In a situation like this, he could take the help of neural machine translation.

Neural machine translation initially used machine learning(ML) and the model provided the statistical model and was not very efficient so after some time NMT(neural machine translation) started using deep learning to produce a new model for translation, and the generated model using deep machine learning is more efficient and fast.

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As neural machine translation uses machine learning and deep machine learning which is the subset of artificial intelligence hence it can be known that artificial intelligence plays an important role in neural machine translation.

OVERVIEWS

Deep neural networks (DNNs) with the strength full ability of understanding and rendering have made big developments in speech recognition and assessment of the image. The different latest achievements in the processing of signal variable, researchers tend to know whether DNNs can achieve a similar improvement in the processing of symbol variable, for example, natural language processing (NLP). Among the many most demanding processing tasks of natural language, automatic translation has become a testing field for scientists and researchers and they want to analyze different forms of Deep neural networks. Machine Translation wants to search for the input language sentence(SLS) and the highly expecting target language sentence(TLS) that provides the highly expecting result. Machine translation is a projection job from one succession to succession. In the present paper, an inclusive outline is provided by this paper to the DNNs'a applications in machine translation with the two aspects: incidental application, which tends to developed standard machine translation systems, and direct application, which embraces DNNs to develop a help of machine translation model[6 7]. It could be detailed ahead as: Application which is provided indirectly to develops up to the minute characteristics accompanied by DNNs within the substructure of ordinary MT systems, that contains many sub-models. An example of this can be, DNNs could be improved to present the input dialect(SL) circumstances of semantics and better output the translated and converted dialect. Quick implementation considers MT as a succession to succession prognosis piece of work along with, in the absence of making use of some particulars from ordinary machine translation systems, drawing two deep neural networks[8]. The first one is an encoder, that acquires knowledge of the uninterrupted description of source dialect sentences. And the second one is a decoder, that produces the required dialect sentence along with input sentence description.

SYSTEM ARCHITECTURE

The architectural structure of the system of NMT(neural machine translation), given with a model with the observational property. The RNN encoder which works in both directions operates the input sentence x J 1 and produces the succession of states h J 1 which is not allowed to be seen. The arrangement representation allocates a weight α to all and every state which is not allowed to be seen, as stated by the last circumstances of the decoder s i−1 together with the circumstance from the encoder. The encoder produces some circumstances which are not allowed to be seen are at that time combined in a sequence that is used to produce the circumstance vector c i. The subsequent word y i is given by the decoder as stated by the circumstance vector c i state s i−1 which is the last circumstance along with the lastly produced word y i−1. figure1: architectural structure of NMT

Interface Model of Encoder-Decoder :

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Neural machine translation uses many models in which the recurrent model is the model which includes this model of encoder and decoder called the interface Encoder-Decoder Interface model. This model needs a large dataset because it can not work on a small dataset. It generally takes a long time to process the dataset for the process of translation.

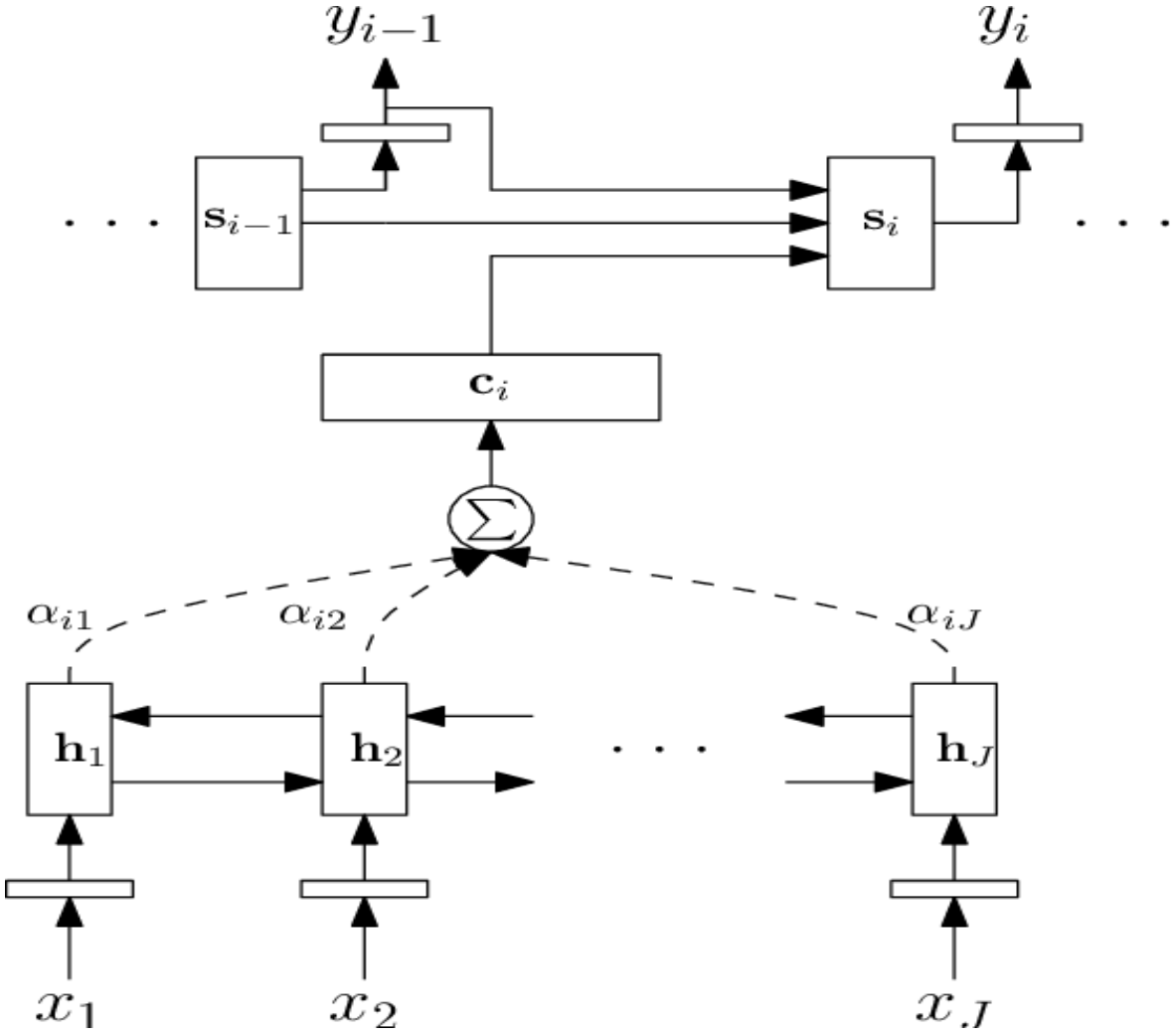
This model has an interface between the encoder and the decoder. In this model, the encoder takes the input which is provided by the user and encodes the input into the formate which can be understood by the machine and it begins the procedure of translation.

Once the translation is finished, it sends the output data to the decoder. The decoder then decodes the input given to it into the formate which can be understood by the user.

The decoder in this model follows some approaches which are provided by the RNN model.

RESULTS

MT (Machine Translation) is an extent of estimation linguistics that pays attention to translating text from one language (source language) to another (target language). Using the power of deep learning(DL), Neural Machine Translation (NMT) has come into the picture as the most famous algorithm to execute this task. For instance, Google Translate is the main industry example of NMT, tech companies all over the globe are going all on the neural machine translation. Machine learning which is also called the state-of-the-art algorithm is an application of deep learning in which very large datasets of translated sentences are used to train a model able to translate between any two languages



that are from source to target language. With the widely distributed amount of research in past years,

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there are so many variations of NMT recently being investigated and deployed in the industry. This architecture is a combination of two recurrent neural networks (RNNs) used with each other in a buckboard to generate a translation model. The encoder-Decoder structure is one of the older and more established versions of NMT. If this architecture is coupled with the power of attention mechanism, this architecture can achieve impressive outcomes.

FUTURE SCOPE

In the world of translation technology, things are changing very rapidly. With the passing years, there are developments in computational scope, AI and data analysis enlarge on what is already have done or possible in terms of both accuracy and speed in the translation world. Neural machine translation (NMT) and a deep-learning system are considered as one of the latest in the line of new technology that is reportedly reducing translation errors by an average of 66%. Such latest improvement in machine translation(MT) has clasped the exceptional awareness of tech giants like Google who have already given in a patent for their own branded version of NMT. Still in the early steps, the Google Neural Machine Translation (GNMT) recently only works with the English – Chinese language pair, with more coming down the pipeline. Neural machine translation helped mankind to remove the barrier of communication among people from different languages and allowed us to improve our growth in every possible field like the economy, technology, medical, etc. But there still neural machine translation failed to understand and translate the source language more deeply like different quotes, idioms, and slang words so in future it will help us to understand the different languages in more detail and allow us to understand its true meaning.

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