**Product Development Laboratory - II**

**Title: Machine Reading Comprehension**

Machine Reading Comprehension is a task in both natural language processing and artificial intelligent research. The **goal** is to train a machine to understand a given passage and then answer the questions related to the passage.

Our project model utilizes **word** **embeddings**, a technique in **Natural Language Processing (NLP)**, **Bidirectional Recurrent Neural Networks (BiRNN)** and utilizes the **attention in neural networks** to highlight some part of the text under the context of the other.

**Work Flow:**

We start with analysis of dataset and then convert the passage and questions to its word level and character level embeddings using NLP. The entire training of the model takes place in three readings. In the first phase, we feed these embeddings to a Bidirectional RNN. In the second pass, the network trains itself with the context of the question. In the third pass, the network finds the answer to the question and ignores the rest of the passage. Finally, we use the concept of Pointer Networks to find the starting and ending point of the answer to obtain the relevant answer as output.

**Tasks in this project:**

1. Converting the words in the passage and the question into word level embeddings and character level embeddings using Natural Language Processing.
2. To read (applying RNN) the passage three times and then fine-tuning (using the attention) the vectorial representation of the context better and better in each iteration.
3. Applying Pointer Networks to the model to find the starting and ending points of the answer to the question from the passage.

**References:**

1. Wissam Baalbaki, Dan Zylberglejd ; CS224N: Natural Language processing with Deep learning Reading Comprehension
2. Natural Language Computing group, Microsoft Research Asia; R-NET: Machine Reading Comprehension with Self Matching Networks

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