Towards Creative Movie Title Generation Using Deep Neural Models

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Abstract : Deep machine learning techniques including deep neural networks (DNN) have been used to model language and dialogue for conversational agents to perform tasks, such as giving technical support and also for general chit-chat. They have been shown to be capable of generating long, diverse and coherent sentences in end-to-end dialogue systems and natural language generation. However, these systems tend to imitate the training data and will only generate the concepts and language within the scope of what they have been trained on. This work explores how deep neural networks can be used in a task that would normally require human creativity, whereby the human would read the movie description and/or watch the movie and come up with a compelling, interesting movie title. This task differs from simple summarization in that the movie title may not necessarily be derivable from the content or semantics of the movie description. Here, we train a type of DNN called a sequence-to-sequence model (seq2seq) that takes as input a short textual movie description and some information on e.g. genre of the movie. It then learns to output a movie title. The idea is that the DNN will learn certain techniques and approaches that the human movie titler may deploy that may not be immediately obvious to the human-eye. To give an example of a generated movie title, for the movie synopsis: 'A hitman concludes his legacy with one more job, only to discover he may be the one getting hit.'; the original, true title is 'The Driver' and the one generated by the model is 'The Masquerade'. A human evaluation was conducted where the DNN output was compared to the true human-generated title, as well as a number of baselines, on three 5-point Likert scales: 'creativity', 'naturalness' and 'suitability'. Subjects were also asked which of the two systems they preferred. The scores of the DNN model were comparable to the scores of the human-generated movie title, with means m=3.11, m=3.12, respectively. There is room for improvement in these models as they were rated significantly less 'natural' and 'suitable' when compared to the human title. In addition, the human-generated title was preferred overall 58% of the time when pitted against the DNN model. These results, however, are encouraging given the comparison with a highly-considered, well-crafted human-generated movie title. Movie titles go through a rigorous process of assessment by experts and focus groups, who have watched the movie. This process is in place due to the large amount of money at stake and the importance of creating an effective title that captures the audiences' attention. Our work shows progress towards automating this process, which in turn may lead to a better understanding of creativity itself.

Keywords : creativity, deep machine learning, natural language generation, movies