A Statement

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Inherited from the spirit of Alan Turing, we urgently hope the birth of a knowledgeable artificial intelligence, which (or who?) masters the linguistic, commonsense, and tremendous world knowledge. And as the crystallization of human wisdom, natural language is the most suitable resource for machines to learn knowledge.

But the bitter truth is, we cannot even extract knowledge in a fully automatic manner from the text. As a pivotal task in natural language processing (NLP), information extraction has been systematically studied for decades. The ultimate goal is to automatically extract knowledge (entities, relations of entities, attributes of entities, events, etc.) from massive textual data. To this end, via modeling information extraction as sequence labeling or classification problems and the effectiveness of modern NLP tools we can partially address the problem when training data is sufficiently annotated. However, the current achievements of knowledge learning are far from our ultimate goal. If we use the so-called state-of-the-art methods to actually attempt to build a knowledge graph, the result will be horrible, because, in the real world, data are noisy, informal, and insufficiently annotated. Hence, it is important to develop methods that represent and extract incessantly emerging new knowledge with little training data. Besides, how to use knowledge in neural networks is another intriguing problem. A human can specify and organize knowledge into different groups like linguistic knowledge, commonsense knowledge, and world knowledge, but they are all represented as dense vectors in deep networks. Therefore, it is also crucial to interpretably incorporate and exploit knowledge stored by humans or distributed in models themselves. One of my guess is that they can be transformed into each other inside the neural networks.

As stated, I research into the representation, extraction, and application of knowledge from natural language. These topics can be separately studied but they can also interpenetrate each other within a comprehensive knowledge computation framework. My research is guided by a seemingly grand vision about knowledgeable AI, but it can also be put into practice to concretely influence the development of information systems in various sectors of society.