Building Natural Language Generation Systems: Studies in Natural Language

Natural language generation (NLG) is a subfield of natural language processing (NLP) that deals with the automatic generation of text from structured data. NLG systems are used in a variety of applications, such as:

Building Natural Language Generation Systems (Studies in Natural Language Processing) by Ehud Reiter

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* Generating news articles from structured data * Generating marketing copy from product descriptions * Generating customer service responses from FAQs * Generating summaries of documents * Generating chatbot responses

Building NLG systems is a challenging task, as it requires the system to understand the underlying data and to generate text that is both fluent and informative. In this article, we will provide a comprehensive overview of the

field of NLG, with a focus on the latest research and techniques used in building NLG systems.

Text Planning

The first step in building an NLG system is to plan the text that will be generated. This involves determining the overall structure of the text, as well as the specific content that will be included in each section.

There are a number of different approaches to text planning, but one common approach is to use a hierarchical structure. In this approach, the text is divided into a series of levels, with each level representing a different level of detail. The top level of the hierarchy represents the overall goal of the text, while the lower levels represent the specific details that will be included in the text.

Once the text plan has been created, the next step is to generate the actual text. This is done using a process called sentence planning.

Sentence Planning

Sentence planning is the process of generating the individual sentences that make up the text. This involves determining the order of the sentences, as well as the specific words and phrases that will be used in each sentence.

There are a number of different approaches to sentence planning, but one common approach is to use a template-based system. In this approach, the system uses a set of predefined templates to generate sentences. The templates are typically designed to cover a specific type of content, such as news articles or marketing copy.

Once the sentences have been generated, the next step is to surface realize them.

Surface Realization

Surface realization is the process of converting the abstract representation of the text into a concrete form that can be read and understood by humans. This involves adding punctuation, capitalization, and other surface features to the text.

There are a number of different approaches to surface realization, but one common approach is to use a rule-based system. In this approach, the system uses a set of predefined rules to generate the surface form of the text. The rules are typically designed to cover a specific type of content, such as news articles or marketing copy.

Challenges and Opportunities of NLG

Building NLG systems is a challenging task, but it is also a very rewarding one. NLG systems have the potential to revolutionize the way we communicate with computers, and they are already being used in a variety of applications.

One of the biggest challenges in building NLG systems is the need to understand the underlying data. NLG systems must be able to interpret the data and to identify the key points that should be included in the generated text.

Another challenge is the need to generate text that is both fluent and informative. NLG systems must be able to generate text that is easy to read and understand, while also providing all of the necessary information.

Despite these challenges, NLG systems have a number of opportunities. NLG systems can be used to automate a variety of tasks, such as generating news articles, marketing copy, and customer service responses. NLG systems can also be used to improve the user experience on websites and other applications.

NLG is a rapidly growing field of research. New techniques and applications are being developed all the time, and NLG systems are becoming increasingly sophisticated. As NLG systems continue to improve, they will have a greater impact on our lives and on the way we communicate with computers.

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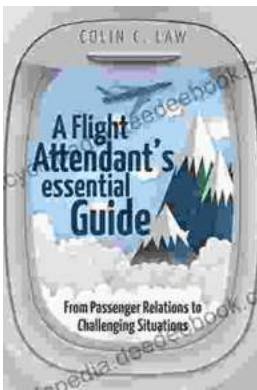
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