LTI Overview

Language Technologies Institute
School of Computer Science
August 29, 2007 (10:30am)

Research Topic
Computational linguistics

Research Problem
How can people communicate more effectively?

Problem Statement
Given the complexities of human language, construct systems that allow people to communicate more effectively in terms of both sharing information and understanding the content of the information.

Operational Definitions
Human language: Languages used by humans to communicate with one another. Human languages can be spoken, written, and/or signed (visually, as in sign language, or tactilely, as in Braille).

Problem Description
The Language Technologies Institute's mission is to "get the right information to the right people at the right time in the right language and the right media in the right level of detail." This work builds on and contributes to an understanding of the complexities of human language. LTI researchers are currently working on projects to interpret speech, accurately translate speech and/or text from one language into another, extract information from documents, organize and filter information, and recognize patterns in both language and biology.

Computer Science Perspective
Computer scientists have long hoped to develop software capable of automatically translating between human languages quickly and accurately. However, language technologies do not just help people understand each other. For example, information retrieval systems that can understand language are better at finding content relevant to the original query. There are also HCI benefits to developing systems that understand human language. Such systems would be both easy and convenient to use, and could be adapted for many contexts (eg, mobile computing). LTI research thus touches on many subfields of computer science, including artificial intelligence and human-computer interaction.

Description of Disciplines Involved

LTI research involves collaborations with researchers in linguistics, statistics, psychology, and biology. The collaboration between LTI researchers and biologists in particular builds off of the similarities between language and biology. For example, amino acids are analogous to a vocabulary, the primary sequences are equivalent to sentences and paragraphs, and the proteins represent a kind of syntax.

Actively Involved Disciplines

Computer science, linguistics, HCI, statistics, psychology, biology, engineering.

Operational Definitions

Actively Involved Discipline: Any discipline from which one or more researchers made a significant contribution to the research design and interpretation of the results. Typically, the resulting research would add to the actively involved discipline's body of knowledge in some way, thus benefiting the discipline as a whole.

References

LTI Home Page:
http://www.lti.cs.cmu.edu/

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