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THE ROLE OF ARTIFICIAL INTELLECT IN COMPUTATIONAL LINGUISTICS

Introduction. According to the Association for Computational Linguistics, "computational linguistics is the scientific study of language from a computational perspective" [3: 13]. The aim of computational linguistics (CL) deals with modeling of natural languages, and draws on a variety of other disciplines, including cognitive computing and artificial intelligence. The goal of computational linguistics is to develop software to understand natural languages and the everyday language we use to communicate. So, CL belongs to the cognitive sciences and overlaps with the field of artificial intelligence (AI), a branch of computer science aiming at computational models of human cognition. *The objective* of the research paper is to discuss the role of artificial intellect in Computational Linguistics.

Theoretical CL takes up issues in theoretical linguistics and cognitive science. It deals with formal theories about linguistic knowledge that a person needs for generating and understanding the language. Today these theories have reached a degree of complexity that can only be managed by employing computers. Computational linguists develop formal models, simulating aspects of the language and implement them as computer programmes [2: 112]. These programmes constitute the basis for the evaluation and further development of the theories. In addition to linguistic theories, findings from cognitive psychology play a major role in simulating linguistic competence. Within psychology, it is mainly the area of psycholinguistics that examines the cognitive processes constituting human language use. The relevance of computational modeling for psycholinguistic research is reflected in the emergence of a new subdiscipline: computational psycholinguistics.

Applied CL focuses on the practical outcome of human language use modeling. The methods, techniques, tools and applications in this area are often subsumed under the term language engineering or (human) language technology. Although existing CL systems are far from achieving human ability, they have numerous possible applications. The goal is to create software products that have some knowledge of human language. Such products are going to change our lives. They are urgently needed for improving human-machine interaction since the main obstacle in the interaction between human and computer is a communication problem. Today's computers do not understand our language but computer languages are difficult to learn and do not correspond to the structure of human thought. Even if the language the machine understands and its domain re very restricted, the use of human language can increase the acceptance of software and the productivity of its users.

Much older than communication problems between human beings and machines are those between people with different mother tongues. One of the original aims of applied computational linguistics was the automatic translation between human languages. The scientists have realized that they are still far away from achieving the ambitious goal of translating unrestricted texts. Nevertheless computational linguists have created software systems that simplify the work of human translators and clearly improve their productivity. Less than perfect automatic translations can also be of great help to information seekers who have to search through large amounts of texts in foreign languages.

Different Uses for Different Approaches:

There are three main branches of linguistics. Each engages computer technology with the goal of creating a formula for reproducing natural human languages, but their approaches to this goal are different across the disciplines [4].

Morphology uses information about word parts to inform the role of the word in a sentence. This information can be turned into rules that allow computers to automatically input hyphenations, correct spelling, and generate natural utterances in spoken or word form.

Phonology uses computer technology to record human sounds and see what is happening on a phonetic level (that is physically in the vocal tract) in order to compare what we know with what is happening on the phonologic level (what we have formulated about languages in rule form [1: 120].

In order to translate a word into another language the computer needs both the morphology and syntax of the word. Words are grouped according to their "tags" (much like in HTML), which include semantic information about the word, like the part of speech or word category. The computer then searched through the tags to find a word appropriate for the context.

Utilizing our knowledge of neural networks and artificial intelligence, researchers have used robots to imitate the ability of infants to learn languages. The success was a crucial discovery afforded to linguistics by computer science concerning the use of these robots in learning the meanings of words without any prior knowledge of grammatical structure [1: 326].

In June of 2014 the combination of computers with linguistics and cognitive science yielded a computer so competent at human speech that it passed *the Turig Test*. In 1950 Alan Turig, one of the fathers of artificial intelligence, proposed the test to prove the machine could think. In order to pass the test, a computer had to convince 30% of participants. The winner was a Russian-made program called Eugene Goostman . The passing of *the Turig Test* is a great milestone in artificial intelligence, which we know to be intimately tied with linguistics and the computer science [1: 328].

The growing relevance of Artificial Intelligence gives us hope for future improvement in CL. However, natural language processing is complex: to obtain a deep analysis, we need to implement cognitive computing systems that can really communicate with humans. These systems can replicate human understanding and, thanks to this ability, are being used for a variety of business needs, including

medical diagnostics, well production optimization, asset allocation and decision making for M&A, strategies for product innovation, and consumer behavior prediction.

The latest advances in computational linguistics will continue to improve the usability of "smart" systems that allow us to communicate with computers using natural language. These are just a few of the ways that systems that are supported by computational linguistics are already changing how we communicate with people, companies and technology:

• Rather than going through an exhaustive telephone menu system, many companies, especially banks, are offering natural language based customer service to handle simple queries (connecting with Q&A knowledge bases or how-to type information) that the customer can speak or write in his or her own language.

• Digital personal assistants or other intelligent agents use a combination of approaches, including computational linguistics, to perform a variety of functions, from limited conversational dialogue, to responding to requests, typing out dictated text (such as for text messages or emails), or retrieving information, like Apple's Siri [5].

• Combined with artificial intelligence mechanisms, such systems can go one step further to actually take action upon our requests, to make restaurant reservations, set up meetings or arrange other services. Among other abilities such as recognizing moving objects, faces and gestures, Honda's robot assistant, ASIMO, verbally responds to questions in different languages as part of its human-like interaction.

Conclusion. Internet of Things systems combined with voice-recognition technologies are being developed to complement home-based electronics systems for temperature control, internet, electricity, sound and more, creating a new market of high-end, smart-home devices. Amazon's Echo is a version of one aspect of this, serving as a voice command device that can play audio (music, podcasts, audio books), provide real-time information on the weather, traffic, etc. or set alarms, or communicate with other smart devices.
The future of computational linguistics is full of interesting applications that will continue to transform the way we live and work.

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