Applied Computational Linguistics in Perspective: Proceedings of the Workshop

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0. INTRODUCTION

Of the various subdisciplines in Artificial Intelligence, only a few have matured to the state that practical application seems imminent. Of these, computational linguistics appears to be a leading contender for real world applications in the immediate future. One area of special interest to the Naval Research Laboratory (NRL) is the application of computational linguistics in automated message systems.

The scheduled meeting of the ACL at Stanford University June 29-July 1, provided an opportunity for a workshop June 26-27 at Stanford. The workshop, "Applied Computational Linguistics in Perspective", was organized in May 1981 as a joint effort by NRL, ACL, and the National Science Foundation (NSF), with funding provided by the Office of Naval Research (ONR). The goal of the workshop was to establish an informed consensus on realistic expectations for applied computational linguistics within a five year time frame. The workshop program committee, consisting of Carroll Johnson, Chairman (NRL Visiting Scientist), Joan Bachenko (NRL), Henry Hamburger (NSF), and Norman Sondheimer (Sperry Univac), invited five panel chairmen who in turn invited the members of their respective panels.

Discussions with several individuals from ONR, DARPA, NSF, and the Air Force Office of Scientific Research (AFOSR) helped focus the choice of panel topics. These topics mapped remarkably well onto the problem of developing automated message systems.

Therefore, this problem was used as a general theme for the workshop discussions.

In general, the message systems problem concerns the distribution of information among message senders and recipients, where the information encoded in a message is coordinated and augmented by a dynamic knowledge base that represents the current operational situation. Incoming messages update the knowledge base, which may modify the address, the priority, or even the content of a message before the message is disseminated. Such a system might use computational linguistics in several ways. For example, maintaining an updated dynamic situation model requires a human supervisor who can monitor the system's conclusions and override its decisions, when necessary. A Natural Language Interface between the situation model database and the person in charge thus provides one application for computational linguistics. If updating requires that a message be modified, Text Generation provides a second application area in which computational linguistic techniques might be used to rewrite portions of a message or to append an update note. A third application area is Concept Extraction, which extracts information from an incoming message and builds a suitable knowledge base representation. A fourth area, Machine Translation, may increase the effectiveness of multinational operations where the native language of a message originator differs from that of a message recipient. Finally, studies in Sublanguage provide a linguistic foundation for each of these applications.

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