

SESSION 14: GOVERNMENT PANEL

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ABSTRACT

The Workshop ended with a first-time ever, hour-long Government Panel session organized at the request of the Workshop Program Committee, which wanted to hear from some of the government people present. The panel consisted of five individuals, each invited to be provocative and each given five minutes to offer his or her personal perspectives. The floor was subsequently thrown open for a general discussion of the issues raised.

PANEL STATEMENTS

Dr. Y. T. Chien of the National Science Foundation discussed the High Performance Computing and Communication (HPCC) initiative, indicating that it presents new opportunities for government agencies to coordinate their research efforts to address Grand Challenge problems, including speech and language. He pointed out that these problems require multidisciplinary solutions and that HPCC could have a broad and beneficial impact.

Dr. John Prange of the National Security Agency indicated pleasure with the higher visibility being given to natural language research. He worried about the similarity of approaches (variations on Hidden Markov Models) being used by many of the speech groups and the current methods of evaluation (which may be focusing efforts too heavily in directions amenable to evaluation). Dr. Prange wants to encourage new ideas and a balance between technology and science, while pushing for portability, scalability, and language independence. He cited TIPSTER as a good example of the benefits of having other agencies heavily involved in DARPA projects from the start.

Dr. Susan Chipman of the Office of Naval Research spoke from the perspective of a psychologist interested both in cognitive science and in applications such as training. She wondered about the generalizability of DARPA's speech work to other applications and worried about using brute force statistics without good theory. Admitting some ignorance about how far speech technology had come, she noted that in trying out various

demo systems she was more struck by the failures (e.g., nonsensical answers) than the successes. She opined that the solution could be to incorporate more top-down constraints as humans do.

Dr. Tim Anderson of the Armstrong Laboratory addressed the Air Force's interest in speech recognition, outlining both the challenges and the benefits of putting interactive voice in the cockpit. He wants systems that need little or no speaker-dependent training, that can recognize connected speech under adverse conditions with a 100-1000 word vocabulary, and that can talk back fluently. Dr. Anderson was particularly pleased and impressed with the cooperation among sites, but thought it unwise for the majority of the community to ride one wagon (HMMs). He made a plea for more innovation and surmised that many researchers stay on that wagon because of the annual evaluation cycles. He also pointed out the need to improve portability between application domains. He hopes to see interactive voice technology become good enough for the Air Force to use in a new generation of aircraft.

Dr. Jordan Cohen of the Institute for Defense Analyses claimed that it is more effective to try to solve specific problems, then generalize, than to start by looking for generic solutions. Therefore, he urged DARPA to find real problems and deal with real users who understand the real requirements. He hoped that the Air Travel Information System (ATIS) could become a live database (not just a snapshot) with which real users could interact, and he said that disagreements over the details of the new CSR corpus would become mute as soon as we find a real customer. Dr. Cohen indicated that he was very pleased with what he had seen at the workshop, that things had come a long way.

AUDIENCE REACTIONS

The ensuing discussion dealt primarily with the issues of innovation, evaluation, requirements, and technology transfer.

Responding to the challenge to do more innovation, one PI spoke of the need for the Government to help assure

stronger funding over longer periods of time – a point the panel agreed with. A visitor commented that frequent evaluations may be encouraging researchers to hug the shore rather than to try risky, long term research.

A senior researcher agreed with the need for innovation, but said that deemphasizing evaluation would surely torpedo progress; he would foster innovation by selecting appropriately challenging problems and corpora. A panelist commented that evaluation currently seems to be driving/defining research, whereas it should be the other way around, with evaluation methods chosen to shed light on the real problems. A government person in the audience countered that anyone wishing to use an unconventional approach must have a way to show that it is in fact providing benefit.

Recalling the Sunday afternoon comments by LTC Mettala, who identified validated Army "requirements" for speech technology, one person pointed out that there is a chicken and egg problem, where one needs to demonstrate at least an initial capability before the Services can accurately identify their requirements. On the other hand, the enunciation of a "requirement" makes it much easier to justify spending research dollars to address those perceived needs.

In that vein, it was pointed out that MUC-2 had exposed the feasibility of the data extraction application in the abstract, that TIPSTER was designed to build on those results, and that it is now benefiting from the interaction with real users.

Some researchers argued that it is not their job to do technology transfer, that they must first develop something to transfer. One claimed that it was not practical to focus on customers at this time, while another said that it was better to get users involved to pull the technology in the right directions.

It was said that we should not think of speech and language technology as end products, but as enabling technology which will succeed when it is embedded in a larger environment and becomes a regular part of daily life. Although there are many important military applications for this technology, the underlying technology transcends application domains and has a wide range of civilian applications as well.

The Chair, who is also the Program Manager, closed the session by congratulating the researchers on the enormous progress reported at the Workshop.