Beyond Words: Identification of Back-Channel Communication Rules in Arabic and Development of Training Methods

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Quarterly Progress Report 9


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1 Task Progress and Plans

Evaluating the Importance of Proper Back-Channel Behavior

As promised in the project charter, we did a set of experiments to evaluate various hypotheses regarding back-channeling in Arabic.

In the ninth quarter, we competed running subjects, and analyzed the results. In brief, we found that:

Languages differ in the way that speakers coordinate their interaction moment-by-moment. Anecdotally, learners who fail to master these skills can be perceived negatively, but this has not been quantitatively analyzed. Here we show, first, that judgments of what is viewed as proper listening behavior differ between Arabic speakers and English speakers. In Arabic speakers tend to invite back-channel feedback (short utterances such as nam and aiwa in Arabic and okay and hmm in English) by means of a prosodic cue in the form of a steep continuous drop in pitch. English speakers do not interpret this prosodic pattern in this way; indeed, they generally misinterpret this as an expression of negative affect. We also show that simulated learners who produce back-channels are judged more favorably by Arab subjects. These findings imply that people involved in intercultural interactions should be educated to notice such prosodic patterns cues and interpret them correctly.

In the tenth quarter we will complete the write-up of these results and submit them for publication, probably to the Journal of Cross-Cultural Psychology. This is our first priority.
**Training Methods**

The charter also calls for the development of methods for training American speakers to understand and emulate the rules governing back-channeling in Arabic.

In the ninth quarter, the journal *Computer Assisted Language Learning* accepted our paper describing the methods and the experimental validation.

Also in the ninth quarter Ward and Escalante gave demonstrations of the training tools and training sequence at the ISCA Workshop on Speech and Language Technology in Education (SLaTE), held in Farmington, Pennsylvania in October.

In the tenth quarter we also hope to implement our design for a language for the higher-level description of prosodic events of interest ([http://www.cs.utep.edu/nigel/dso/qdl.pdf](http://www.cs.utep.edu/nigel/dso/qdl.pdf). This may to enable the two parts of the training system to be repurposed to other languages without programming.

**Toolset Production**

As stated in the project charter, we will “produce a toolset for the automatic discovery of new rules in new languages and cultures”.

In the tenth quarter we will resume work on this, implementing and testing one or both of our proposed algorithms for the automatic discovery of prosodic features for the prediction of back-channels and similar phenomena, as described at [http://www.cs.utep.edu/nigel/dso/qdl.pdf](http://www.cs.utep.edu/nigel/dso/qdl.pdf)

**Integration into TLT**

The charter calls for us to apply these training methods in ISI’s Tactical Language Trainer (TLT).

In the ninth quarter we completed reimplementation of our third and final component, the cue production exercise, to make it run on Windows. Downloads of the executable and the source code are available at [http://www.cs.utep.edu/isg/aizulawin/](http://www.cs.utep.edu/isg/aizulawin/) or via the project homepage. At this point this tool, like the other components, is ready to be integrated into TLT. We must note that, although adequate for use as part of the training sequence as done in our environment, these components will doubtless require interface changes and perhaps other adjustments to make it suitable for use in the Tactical Language Trainer.

In the tenth quarter, as soon as ISI and/or Alelo is ready to work on this, we will assist with the integration of the tool into TLT, including not only the technical aspects, but also in tuning the presentation to be better for soldier-learners.
Inter-Cultural Misinterpretations

As noted in the second quarterly report, the fact that Americans can find Arabic grating may be due in part to the prosodic features we have uncovered. That is, we hypothesized that these prosodic patterns are perceived negatively by Americans, but not by Arabs.

In the ninth quarter we completed the experiments. In the tenth quarter we will complete the write up. This will be a section in the paper mentioned above.

Also in the ninth quarter the Counterintelligence Field Activity (DoD), which is very interested in issues of cross-cultural misunderstandings, awarded Novick and Ward $181,264 to do follow-on work on the theme of Active Listening and Trust Across Cultures.

Other

Our spin-off project on uncovering the rules governing back-channeling in Northern Mexican Spanish, which started as a way to train a student but was later picked up as an activity on an NSF grant, was written up and submitted for inclusion in the Seventh HDLS Proceedings, an edited volume to be published by the Cambridge Scholars Press.

2 Task Status Overview

The tasks are as listed in the Project Charter.

<table>
<thead>
<tr>
<th>task</th>
<th>completed (approx.)</th>
<th>comments</th>
<th>(projected) completion</th>
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<td>1.1 Rule Discovery</td>
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<td>BP, CP, D, T, T</td>
<td>Spring 2006</td>
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<tr>
<td>1.2 Quantifying Importance</td>
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<td>JI, G</td>
<td>Nov. 2007</td>
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<tr>
<td>1.3 Training Method Development</td>
<td>100%</td>
<td>JP</td>
<td>Spring 2007</td>
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<td>1.4 Toolset Production</td>
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<td>G, CP</td>
<td>Spring 2008</td>
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<td>1.5 Integrate Training into TLT</td>
<td>80%</td>
<td>S (components ready)</td>
<td>tbd*</td>
</tr>
<tr>
<td>1.6 Incorporate into TLT Agents</td>
<td>50%</td>
<td>S (components ready)</td>
<td>tbd*</td>
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<td>2.3 Examining Breakdowns</td>
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<td>Nov. 2007</td>
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<tr>
<td>2.4 (incorporated into 1.2)</td>
<td>90%</td>
<td>JI</td>
<td>Nov. 2007</td>
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<tr>
<td>2.5 Other</td>
<td>50%</td>
<td>G, BS, O, O, O</td>
<td>ongoing</td>
</tr>
</tbody>
</table>

codes: J = journal article, B = book chapter, C = conference paper, W = workshop paper, O = oral presentation, S = software, D = data collection, G = follow-on grant received; P = published, S = submitted, I = in progress

* to be determined, depending on ISI/Alelo’s schedule
3 Administrative Notes

We have been informed that Stacey Marsella has taken over from Lewis Johnson as our ISI point of contact.

4 References

Project documents and software are available at the private URL http://www.cs.utep.edu/nigel/dso/.