Phonetic marking of stance in a collaborative-task spontaneous-speech corpus

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ATAROS Corpus
- 5 collaborative tasks
- Unscripted, dyadic conversation
- High density of stance moves
- Differing levels of involvement
- Speaker factors (sources of variation)
- Known, controlled (16-18)
- Dialect region (Pacific Northwest)
- Gender (same or mixed)
- Age 18-75 (matched generation)
- Strangers, no designated leader
- High audio quality
- Sound-attenuated booth
- Head-mounted microphones

Increasing Involvement Tasks

1. Map
- Each speaker has a different "superstore map" with names of the same ~50 household items arranged in columns ("aisles")
- Dyads discuss how arrangements differ

2. Inventory
- The same ~50 household items printed on Velcro-backed cards
- Dyads arrange items on felt-covered wall representing a store inventory map

3. Survival
- The same ~50 items on screen with survival scenario: on a sinking ship, found raft, items
- Dyads choose items to take for cold-weather survival

4. Category
- Each speaker has an "audit list" with ~50 imaginary country services arranged in categories ("departments")
- Dyads discuss how arrangements differ

5. Budget
- The same ~50 county budget items arranged in 4 departments
- Dyads decide which items to cut

Task Validation
- Compare Inventory & Budget Tasks (low vs high involvement)
- Sample: 12 dyads (total 6 males, 6 females)
- Faster speech in Budget Task
- Longer utterances in Budget Task, esp. for males
- More filled pauses ("uh, um") and truncated words in Budget Task, esp. for males

Future Work
- Goal: 30 dyads, even mix of ages, genders
- Fine-grained stance annotation
- Prosodic analysis
- Correlate stance, involvement with acoustic measures indicating hyperarticulation, e.g.:
  - Vowel space expansion, area of convex hull
  - Energy modulation spectra

Goals
- Build a stance-rich audio corpus of unscripted conversation
- Develop, apply stance annotation schema
- Automatically extract acoustic measurements
- Identify acoustic measures indicative of stance
- Automatically identify stance from acoustic signal

Stance
- Subjective attitudes, opinions about topic of discussion [1-2]

Motivation
- Stance essential to collaboration, negotiation, decision-making
- Automatic detection of sentiment/subjunctivity has used written text [3-5] or lexical traits of spoken corpora [6-12], but more info is available in the speech signal [13-15]
- Existing corpora have low density of stance-taking, may have low audio quality, many uncontrolled speaker/situational factors

Transcription
- Force-alignment using PZPA [21] to mark word and phone boundaries

Annotatation
- Coarse
  - Utterance between 500ms+ silences marked for polarity (positive, negative, neutral) and stance strength:
    - 0: None: reading, backchannels, facts
    - 1: Weak: cursory suggestion, suggest solution, solicited opinion, mild opinion/assessment
    - 2: Moderate: stronger/emphatic versions of items in #1, disagreement, offer alternate solution, question other’s opinion
    - 3: Strong: very strong versions of #1-2

Household Items Set
- 2 sets, each with ~50 items
- Differing roles
- Budget Task, esp. for males
- Unscripted, dyadic conversation
- High density of stance moves
- 3 increasing in involvement

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References
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