



A Handheld Flexible Phrase Translator

Melvyn Hunt & Yoon Kim



Overview



- ❑ The central idea
 - large set of basic phrases with many variants
- ❑ Principles in designing the phrases
 - make sure the response will be comprehensible
- ❑ Some technical details
- ❑ Grammar of the variants for one basic phrase
- ❑ Extension to two-way translation
- ❑ Live Demo

The Central Idea

- ❑ To equip a traveler with a handheld device providing voice-to-voice translation of a large set of phrases for specific scenarios
- ❑ But the user can't be expected to know what the phrases are
- ❑ Solution: make the phrases highly flexible
 - map the many forms to a single “base form”
 - translate the base form



Mode of Operation

- ❑ User speaks a phrase in his/her native language
- ❑ The translator displays up to 5 base phrases
- ❑ The user selects the phrase that's the best translation of the underlying intent
 - (if the confidence on the top choice is high enough, the translator may carry on without confirmation)
- ❑ The translator accesses the translated phrase corresponding to the selected base phrase
 - and plays out a spoken recording of the translation

Some Constraints on the Phrases

- ❑ No use translating a question if the user can't understand the answer!
- ❑ So translated phrases must be carefully constructed:
 - “please point to the restrooms”
 - and *not* “where are the restrooms, please?”
 - “please write down the cost of the room for three nights”
 - “please point to the bus stop on this map”



Technical Background

- ❑ Novauris has developed compact technology for spoken access to very large lists
 - works on smartphones, PDAs and other mobile devices
 - especially effective when spoken items are long
- ❑ We have extended the technology to allow efficient processing of optional components (e.g. “please”)
- ❑ and to embed sets of alternatives in an item (e.g. “I’d like an apple / an orange / a tomato ... juice [please]”)
- For more technical details, please see our talk:
Recognition from Large Lists in the Technical Track session
“Effective use of speech technology” 2:45 to 4:00 this afternoon

Grammar for the base phrase: “Do you have a reservation?”

- [and] do you have a >reservation [please]
- [and] have you (got | made) a >reservation [please]
- [and] >RI >if you (have [got] | [have] made) a >reservation [please]
- >RI >if you (have [got] | made) a >reservation [please]
- >RI >if >you've (got | made) a >reservation [please]

Macro definitions:

>RI* = [please] (can | would | could) you [please] tell me [please] |
(may | might | could | can) I ask [you]

>if = (if | whether)

>reservation = (reservation | booking)

*“RI” = “Request Information”

- **NB** The ASR is quite robust, and phrases outside the anticipated set are frequently correctly classified

Extension to Two-Way Mode

- Novauris ASR is speaker-independent

- so if ASR is provided in both languages, both parties can speak in their native language
- but the phrases from the experienced party must be designed to evoke simple responses from the inexperienced party

- for example, an immigration officer should say:



- “Is the purpose of your visit business or pleasure?”
NOT “What’s the purpose of your visit?”

- Anticipated responses:

“Business”, “Pleasure”, “Both”, “Neither” and variants

Demonstration



English ↔ Korean

