E1 - CULTURE ET EXPRESSION

Coefficient : 5

LANGUE ANGLAISE APPLIQUÉE À L'INFORMATIQUE ET À LA GESTION

(partie écrite)

Durée : 2 heures   Coefficient : 2

L'usage d'un dictionnaire bilingue est autorisé.
Les calculatrices sont interdites.

SPEAK NATURALLY

Machine recognition of continuous, real-world speech has been one of the most complex challenges faced by linguists and software developers. However, several new packages coming to market this year, can deal with normal speech, recognising up to 200 words per minute. "Speaking speed is no longer an issue. How fast can you think ?" says Melvyn Hunt, managing director of Dragon Systems UK.

5   There will never be an exact match between two spoken words. Even one person doesn't say the same word in the same way twice. Speed and emphasis vary depending on context but also on the speaker's emotional situation, making speech recognition a complicated task for developers.

Continuous speech dictation software has been available for the last 18 months but has been limited to around 25,000 words and profession-specific vocabularies, such as for radiologists (e.g. IBM's
10 MedSpeak). Now continuous systems such as Dragon's NaturallySpeaking are starting to replace existing systems that usually work only with discrete speech punctuated with pauses or that are limited in vocabulary.

Simply put, these new systems do the same as humans do, albeit primitively. They separate speech into words or phonemes (the basic building blocks of speech), compare the acoustic patterns of the speech with the patterns stored in the database, and find the most likely word.

15   General-purpose dictation software typically come with up to 60,000-word vocabularies and the ability to add new words ; however, they cannot cope with input at natural talking speeds (limited to about 100 words per minute), and they require the user to punctuate sentences with short pauses. They usually work better when given the chance to adapt to a regular user's speech patterns and learn frequently used words.

20   Today's dictation software, when adapted to a user's speaking characteristics and optimized for certain contexts, achieves around 95 percent accuracy. However, the ultimate aim is for all systems to be speaker-independent and multilingual.

Building a speech recognition engine in multiple languages requires a lot of resources because you need to collect a large database of speech samples first, including all accents, dialects, and the unique

25 sounds in that language. "This is quite a lengthy process, not least because you must have recordings of several hundred speakers to be able to produce a good model," says Richard Winski, manager of language resources and technology at Vocalis Group. "With access to a suitable database, however, you can normally add a new language in a few weeks."

Tania HERSHAM
BYTE Magazine - October 1997

QUESTIONS

1. - Résumez le texte **en français** en 150 mots. *(12 points)*

2. - Répondez **en anglais** aux questions suivantes : *(8 points)*

a) Do you think it's really worth putting so much effort into developing voice recognition systems ? Justify your answer. *(120 mots. 5 points/8)*

b) You are a radiologist and you have just read an advertisement about MedSpeak. You send IBM a message stating your expectations, asking for any documentation available, a price-list and if possible a demonstration. *(80 mots. 3 points/8)*.

Liste des points incontournables devant figurer dans le résumé :

1. - La reconnaissance par un système informatique d'un discours authentique représente un défi qui mobilise d'énormes moyens.

2. - Plusieurs réponses sont d'ores et déjà commercialisées : le débit de la parole n'est plus un problème, mais des difficultés subsistent.

3. - Les premiers systèmes sur le marché ont un champ lexical limité, cantonné à des applications spécifiques.

4. - Les systèmes plus récents (Dragon's NaturallySpeaking par exemple) qui fonctionnent suivant les schémas de la parole humaine (mots/phonèmes) sont plus performants, jusqu'à 95 %.

5. - Les limites : la vitesse d'élocution ne peut pas être normale, elle dépend du débit (pause) et du côté itératif de certains mots et schémas du discours.

6. - Les objectifs : devenir totalement indépendant du locuteur et multilingue.