CONCLUSION

Where are we?

• Speech coding is ≈ dead (in terms of research :) ) ; consumer products available

• Speech recognition is now reaching the market of consumer products (personal dictation); still a long way to go, though (robustness, language models, speech understanding)

• Speech synthesis is now living exciting times, ≈ ASR in the mid 80’s (automatic unit selection)

On the importance of large text and speech corpora

• Tagged text corpora required for training language models for ASR, phonetizers and taggers for TTS

• Phonetically labeled speech corpora needed for ASR (multi-speaker, 100s hours) and TTS (single speaker, 1-5 hours)

• ELRA (European Language Ressource Agency) and LDC (Language Data Consortium) collect and distribute databases

• From expert-based systems to corpus-based systems

Speech Science?

This time is over

– planes do not flap their wings
– replace experts by corpora

cf. Jelinek’s “Each time I fire a linguist my recognition rate goes 1% higher”

1. Future milestones in speech processing will come from labs with strong commitment to solid, portable, and extensible code;
2. Speech scientists and software engineers will soon be the same people.

Speech Engineering!

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I don't believe
in
Computer "Science"

from R. Feynman's talk
on Quantum Computers
Bell Labs, 1985

Where to go now?

• Books

  » *Traitement de la Parole*, R. Boite, H. Bourlard, T. Dutoit,
    J.Hancq, H. Leich, Presses Polytechniques Romandes,
    1999 (in press)
  » *Speech Communication: Human and Machine*, Douglas
    O'Shaughnessy, Addison Wesley series in Electrical
  » *Natural Language Processing in Prolog*, G. Gazdar and C.
    Mellish, Addison Wesley, 1989
  » *An Introduction to Text-to-Speech Synthesis*, Thierry
  » *Fundamentals of Speech Recognition*, Lawrence Rabiner
    Hall

• On the web

  » speech.comp newsgroup
  » the unescapable speech FAQ :
    http://svr-www.eng.cam.ac.uk/comp.speech/