# Problems and Future Directions of Speech Translation Technology

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Contribution to Panel Discussion at ASRU 2007

Machine Translation goes to Hollywood
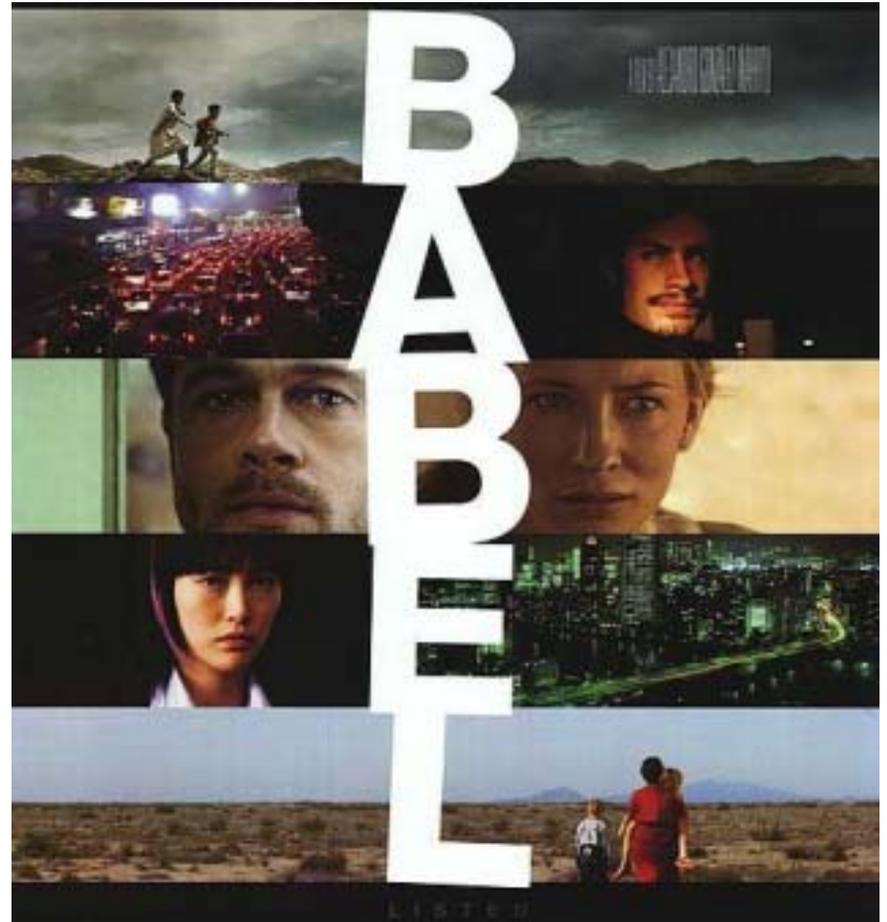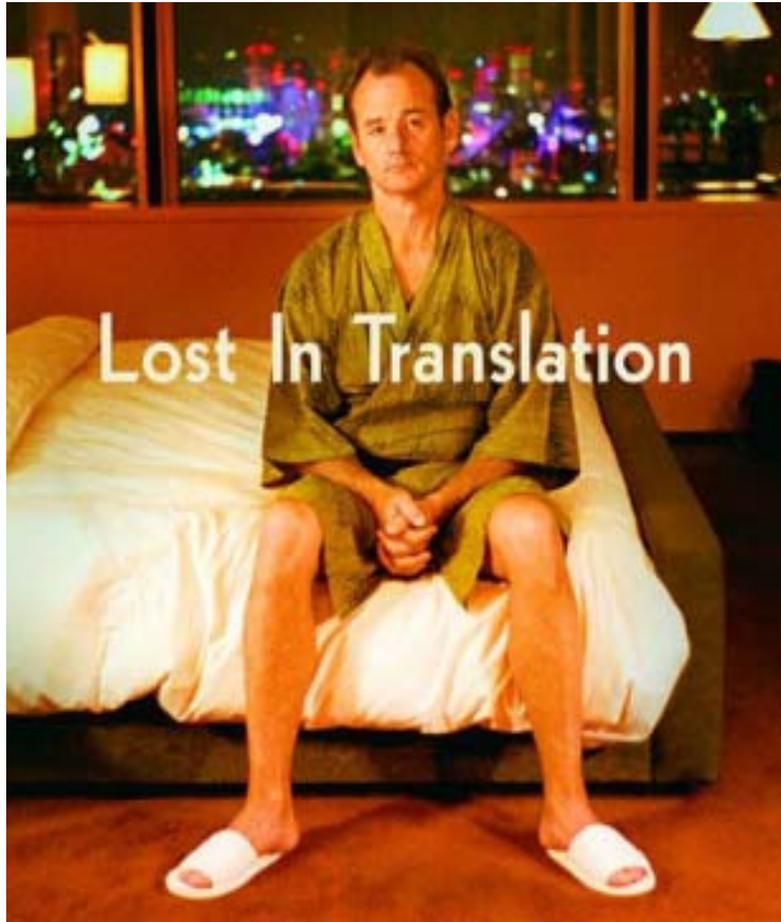
Do we need (Speech) Translation?

- **Obviously yes:**
  - ☐ EU around 800 million Euros
  - ☐ The Canadian Translation Bureau US$ 200 million
  - ☐ Microsoft spends around US$ 300 million a year
  - ☐ Oracle spends about US$ 200 million
  - ☐ Automotive companies spend between US$ 10 and US$ 35 million a year

Do we need Automatic Speech Translation?

- ■ Who is using it? Who is asking for it?
- ■ Current and recent research projects
    - ☐ GALE (DARPA): Broadcast translation – aka Intelligence gathering
    - ☐ TransTac (DoD): translation for US soldiers in Irak, i.e. military and security forces
    - ☐ TC-Star (EU-Commission): Parliamentary speeches, but no follow-up activity
    - ☐ Str-DUST (NSF ☺): Lecture translation (academic environment); actually, lectures get already translated (manually), so maybe
    - ☐ C-Star/IWSLT: Travel domain
      some companies try to commercialize it, so maybe
    - ☐ Meeting translation (still to come): more convincing scenario then lecture translation
- ■ Most applications are still in Demo and Wanna-Be stage

First Things First: Vocabulary Coverage

- OOV rate may be low, but it's always the one unknown word that matters
  - Often named entities or domain specific vocabulary
  - Information loss – difficult to recover from
  - 1. Get the words; 2. get them right; 3. in the right order;
- Possible solutions
  - Limited domain S2S translation system with the 800k vocabulary (on your cell phone)
    - Translation component doable
    - But our ASR colleagues are not happy
  - Domain adaptation, localization
    - User can select: tedious, error-prone
    - GPS enabled (system should know that I am in Kyoto right now, what the name of the next subway station is, etc.)
    - Search external sources to fill the gaps (we are connected anyway)

Future Research/Development Directions

- Bringing (speech) translation to the user
  - Shouldn't companies be doing this?
  - Yes, but more partnership between academia and companies could be beneficial for both sides
  - Having a real need could bring
    - The funding we desperately need in a Post-Gale-ReEval-Era
    - The data we desperately need for our data hungry training algorithms
- Turn usability into research questions
  - How to ensure vocabulary coverage
  - Context awareness, user-needs awareness
  - Availability of translation service (anytime, anywhere)
  - Feedback to user about reliability of translation