# Automatic Estimation of Simultaneous Interpreter Performance

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# Simultaneous Interpretation (SI)

#### Translation of the spoken word in real time



 $\blacktriangleleft$  . . . . . . INTERP SOURCE



# **Computer Assisted Interpretation (CAI)**

#### Source Transcription

last year I showed these two slides so that demonstrate that the arctic ice cap which for most of the last 3 million years has been the size of the lower 48 states has shrunk by

#### Terms

slides => diapositive ice cap => calotta di ghiaccio shrunk => ridotto

#### Entities and Numbers last year arctic 3 million 48



## **Computer Assisted Interpretation (CAI)**

#### How do we ensure

#### maximum utility with minimum distraction?





#### **Estimating Interpreter Performance**

Don't offer help when they don't need it!Estimate how well the interpreter is doing





#### We already do this in Machine Translation!

Can we apply it to **Simultaneous Interpretation**?



QuEst++ is an existing framework for QE (Specia et al., 2015)

























#### Method









**Carnegie Mellon University** Language Technologies Institute











#### **Baseline Features**

- Number of words
- Average word length
- Language model probability
- N-gram frequency
- Punctuation



**SOURCE:** "Will the Parliament grant President Dilma Rousseff, on the very first occasion after her groundbaking groundbreaking election and for no sound formal reason, the kind of debate that we usually reserve for people like Mugabe? So, I ask you to remove Brazil from the agenda of the urgencies." (**48 words**)

**INTERP:** "Ehm il Parlamento... dopo le elezioni... darem- dar spazio a un dibattito sul ehm sul caso per esempio del presidente Mugabe invece di mettere il Brasile all'ordine del giorno?" (**27 words**)



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#### **SI Model Features**

- Pauses/hesitations/incomplete words
- **Non-specific words** is the interpreter avoiding specific terminology?
- **Cognates/Ioan words** if a word is almost identical in both languages an interpreter shouldn't struggle with it (unless it's a 'false friend'!)



#### **Results**





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# Analysis

**SOURCE:** "Will the Parliament grant President Dilma Rousseff, on the very first occasion after her groundbaking groundbreaking election and for no sound formal reason, the kind of debate that we usually reserve for people like Mugabe? So, I ask you to remove Brazil from the agenda of the urgencies." (**48 words**)

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ACTUAL METEOR: 0.0789 BASELINE PREDICTION: 0.1271 SI MODEL PREDICTION: 0.0660



## Future Work

- **Evaluation Metric** finding a metric better aligned with the uniqueness of strategies in SI
- **Live system integration** streamlining the system to provide instantaneous feedback
- **ASR** evaluate the model on ASR output
- **Speech model** enhance the model using prosodic speech features



#### **Questions?**

#### cas1@cs.cmu.edu github/craigastewart/qe\_sim\_interp

