Automatic Estimation of Simultaneous Interpreter Performance

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Simultaneous Interpretation (SI)

Translation of the spoken word in real time





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
```

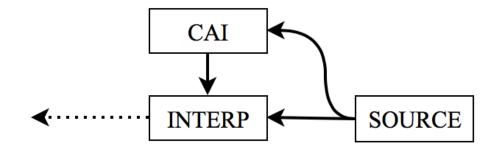
Entities and Numbers

```
last year
arctic
3 million
48
```

Computer Assisted Interpretation (CAI)

How do we ensure

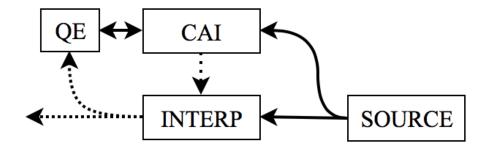
maximum utility with minimum distraction?



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!**

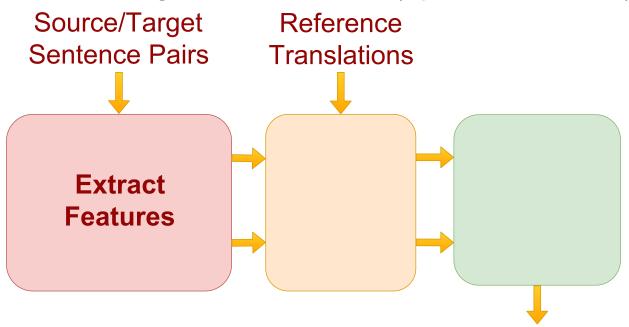
Can we apply it to **Simultaneous Interpretation**?

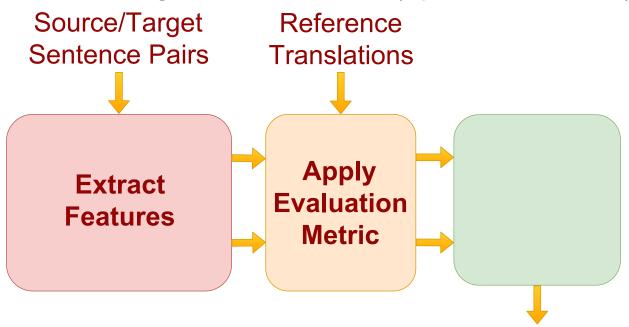
QuEst++ is an existing framework for QE (Specia et al., 2015)

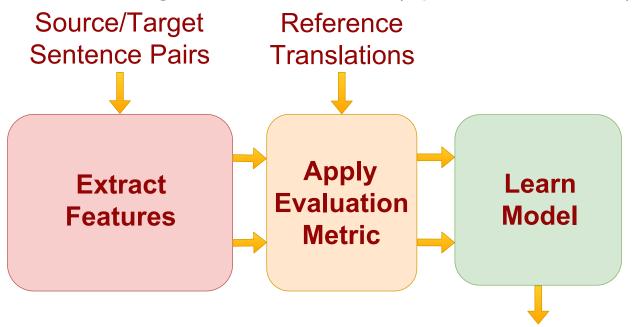
Source/Target **Sentence Pairs**

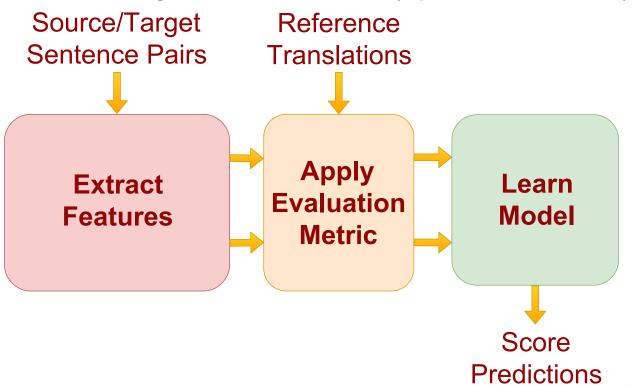
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Source/Target **Sentence Pairs Extract Features**

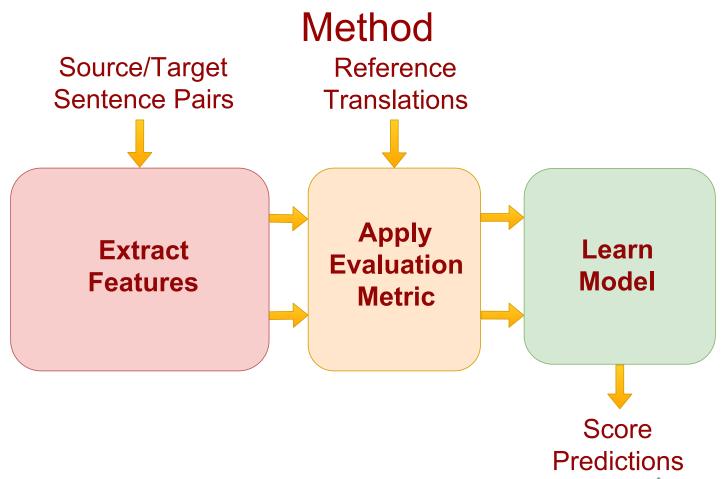


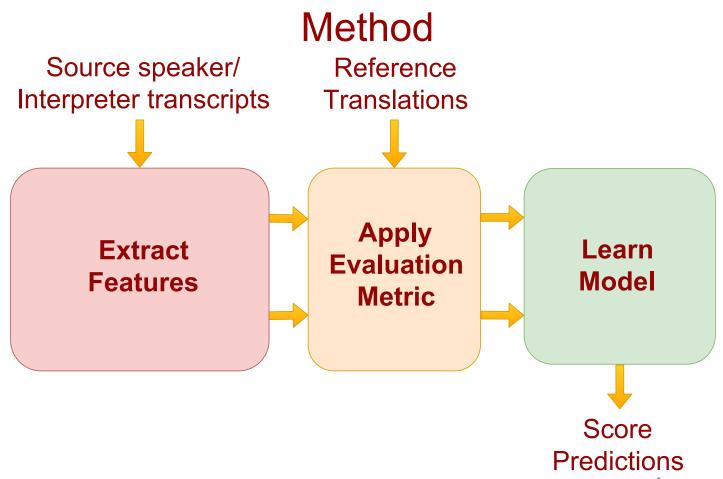


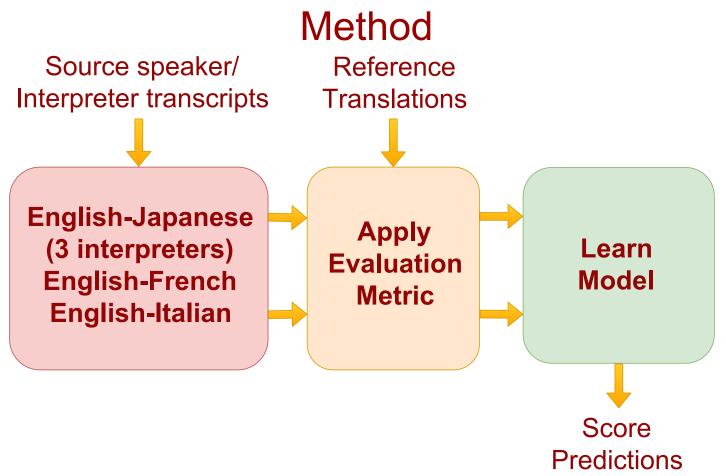


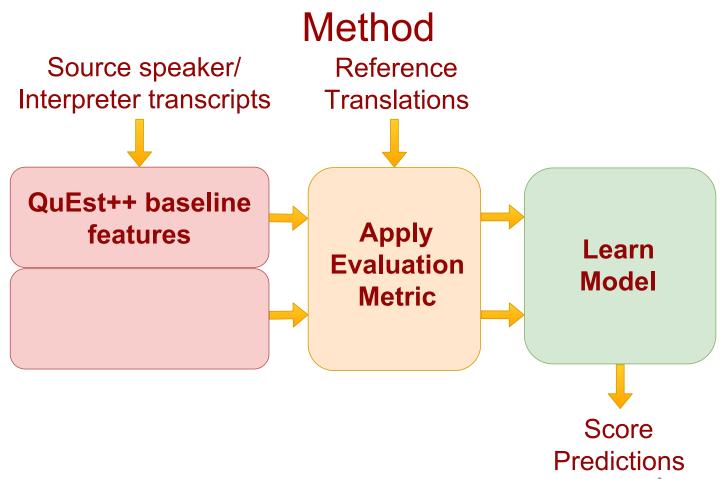


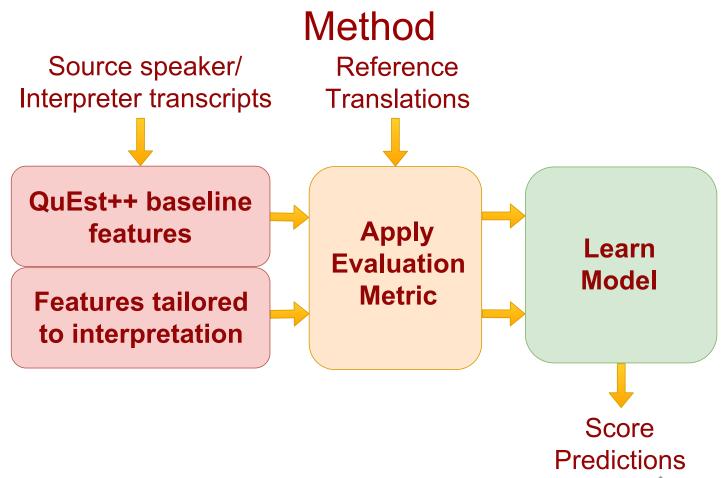
Method

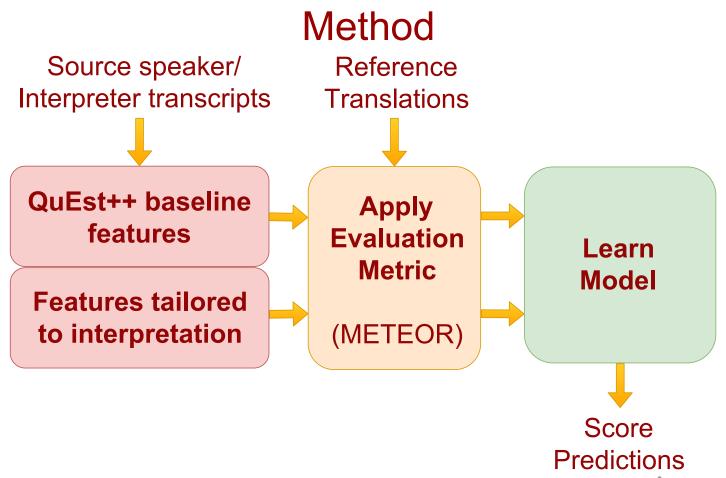


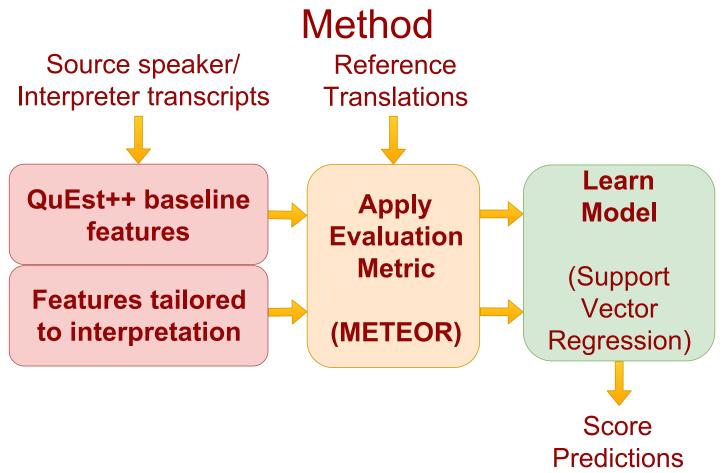


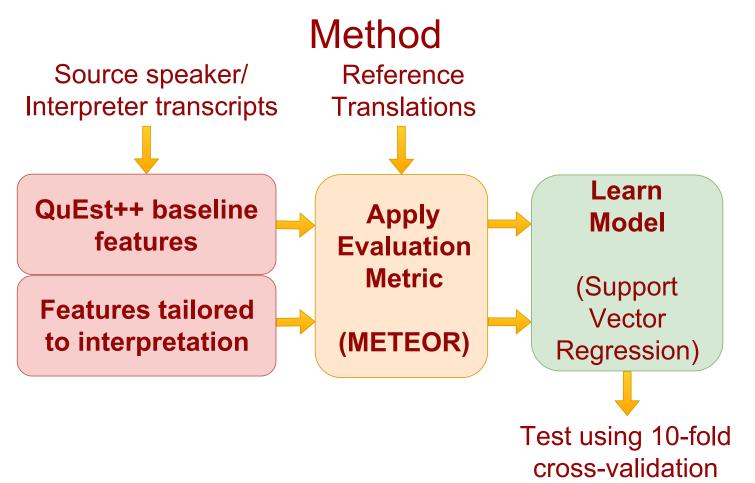












Baseline Features

- 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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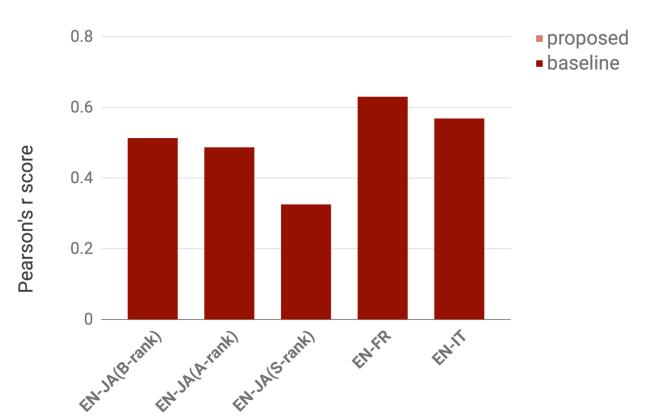
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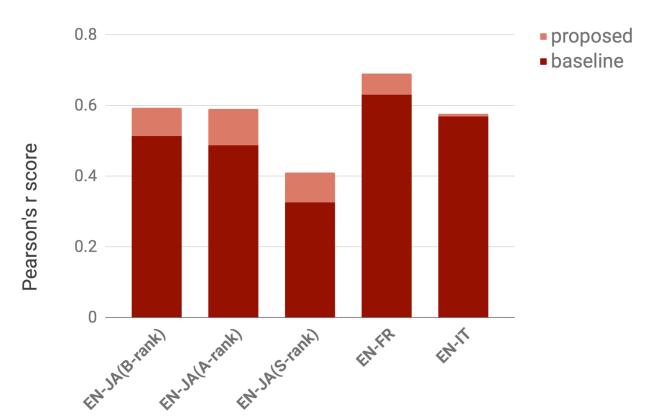
SI Model Features

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

Results



Results



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