

Inbound vs. Outbound translation

- inbound*: user responsible for correct interpretation
- outbound*: user responsible for correct message

Ptakopět: environment for outbound translation

- a user wants to translate to a language that they do not understand
- receive cues that should inform about translation quality
- may rephrase the query while keeping its intention

Objectives

- high quality of the translation
- high confidence of the user about the translation quality

Controlled variables

- cue modules
- MT systems (target language, type)

Ptakopět components

Stimuli 1

- 70 screenshots of web forms with a pre-filled query + website topic
- e-commerce domain

MT systems 3

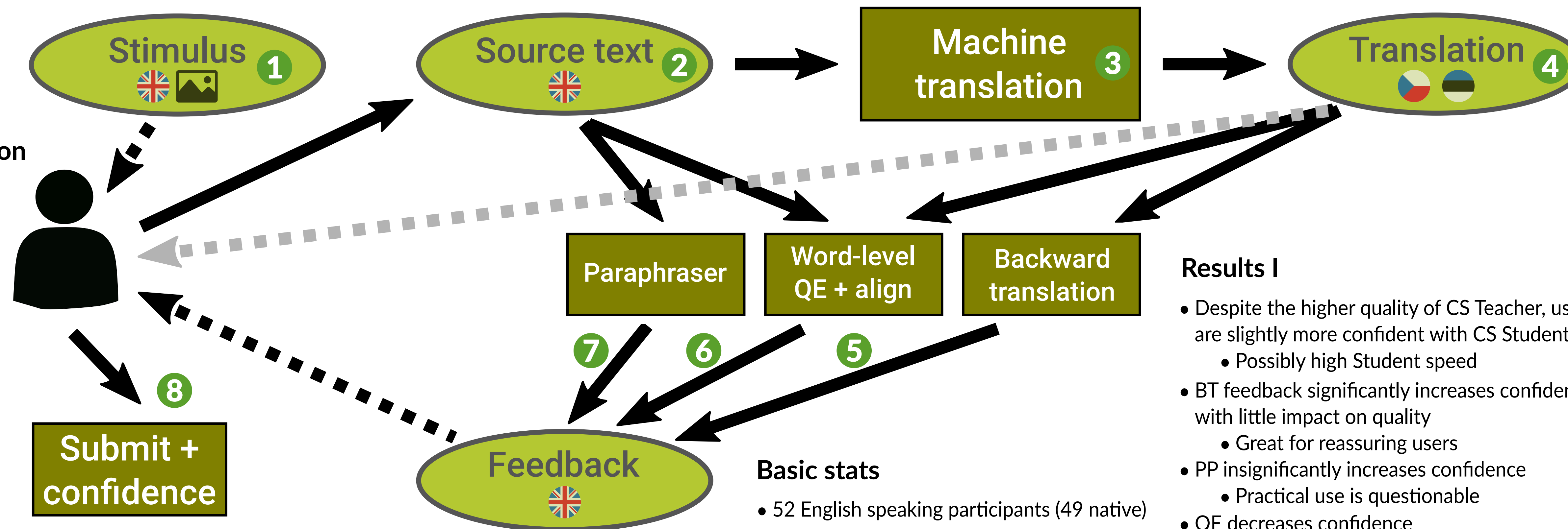
- transformer-based models
- Czech Teacher (Czech 3)
 - winning CS-EN system of the WMT'19 News Translation Shared Task
- Czech Student (Czech 2)
 - CPU-optimized student created by knowledge distillation using Teacher
 - much faster
 - worse by 0.5-3.0 BLEU
- Czech weak teacher (Czech 1)
- Estonian student
- randomly select

Cue modules

- Backward translation (BT) 5
 - same MT in a reversed direction
- Word-level quality estimation (QE) 6
 - glass-box features exploiting information from MT system
 - projected to source by word alignment
 - only 14-37% F-score of detecting errors
- Paraphrasing (PP) 7
 - pivot translation via 41 languages
 - grouped by similarity
- random combination (even empty)

Self-reported confidence 8

- how much the user believes the translation is correct
 - from 1 (least) to 5 (most)



Basic stats

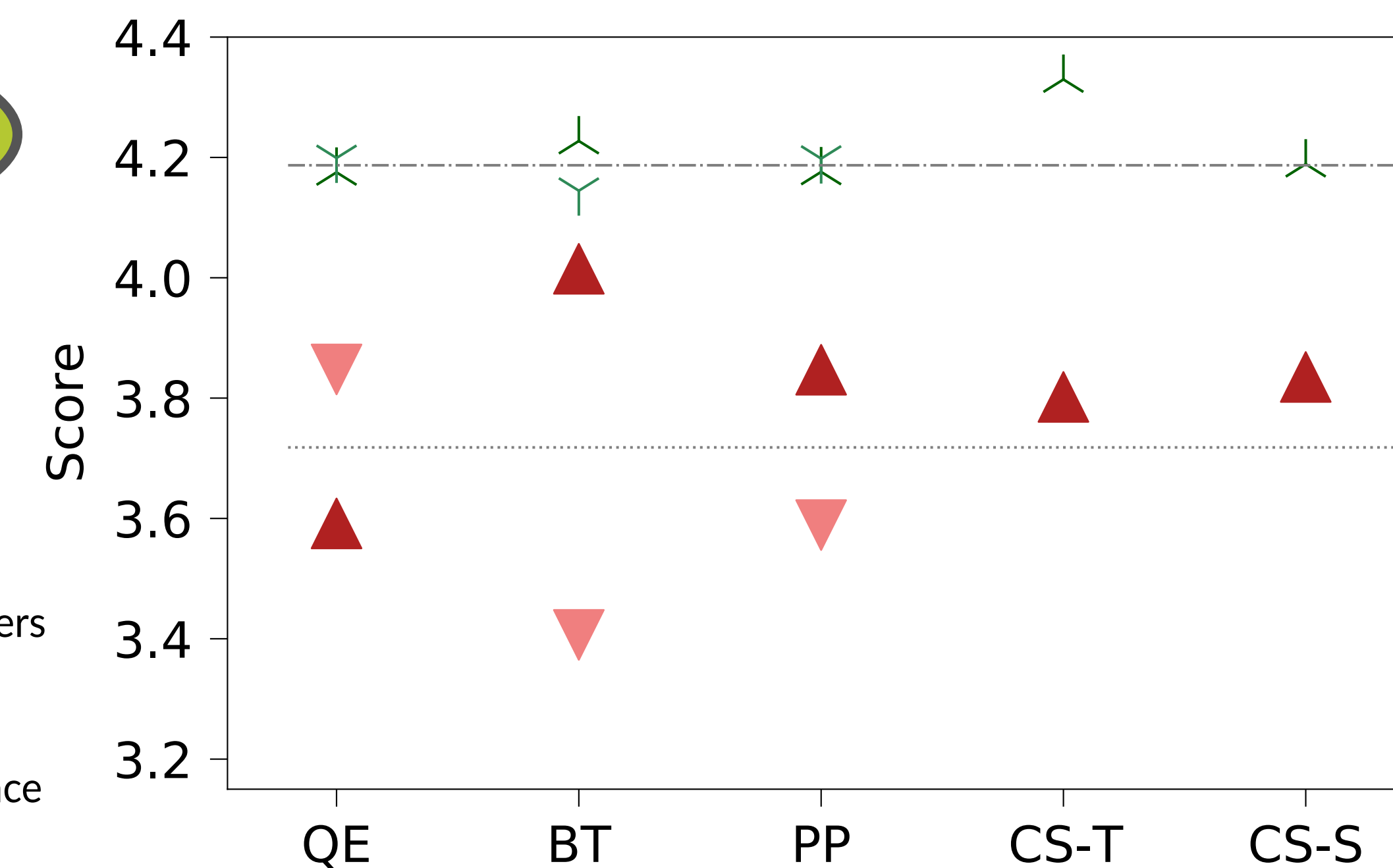
- 52 English speaking participants (49 native)
- 70 scenes with a random combination of an MT system and cue modules
- 2,486 valid scenes collected in total (48 per user on average)

	# Scenes	Time [s]	Actions	Pace [s]
CS Teacher	601	52	1.66	41
CS Student	643	42	3.66	17
+BT	1253	49	2.55	29
+QE	1240	49	2.86	26
+PP	1211	51	2.75	28

Results I

- Despite the higher quality of CS Teacher, users are slightly more confident with CS Student
 - Possibly high Student speed
- BT feedback significantly increases confidence with little impact on quality
 - Great for reassuring users
- PP insignificantly increases confidence
 - Practical use is questionable
- QE decreases confidence
 - Word-level models not mature enough for user-facing applications

Avg overall quality (rounded)	1	2	3	4	5
5	2.05% (51)	4.67% (116)	6.48% (161)	11.46% (285)	17.34% (431)
4	1.97% (49)	5.31% (132)	9.49% (236)	12.99% (323)	11.02% (274)
3	0.80% (20)	2.17% (54)	2.78% (69)	3.90% (97)	3.70% (92)
2	0.40% (10)	0.64% (16)	1.01% (25)	0.52% (13)	0.72% (18)
1	0.04% (1)	0.04% (1)	0.00% (0)	0.24% (6)	0.24% (6)



- ▲ Confidence, module enabled
- ▼ Confidence, module disabled
- Confidence, average
- ▲ Translation quality, module enabled
- ▼ Translation quality, module disabled
- Translation quality, average

Results II

- Both confidence and quality scores cluster around the highest values
 - 63% of scenes received 4 or 5 in both scores
- Positive in terms of industry progress, yet harder to analyze
- Could be mitigated by:
 - Much lower-resourced language pairs
 - More complex queries to translate

Translate the highlighted text in the online form into Czech. Try to achieve the best possible translation quality.

Stimulus: 2/7, Block: 6/10

1 2 3 4 5

8 HELP SKIP NOTE

accomodation

HOTEL CVILIN HOME HOTEL

TERMS & CONDITIONS

1 ☐ I agree with [Terms and cancellation conditions](#) and [Personal data processing conditions](#)

☐ I do not want to receive any marketing communication

[hide note](#)

I would like to have room with direct garden access

PAYMENT METHOD

PAYMENT UPON ARRIVAL WITHOUT GUARANTEE
NON-BINDING REQUEST - AT THE HOTEL WITHOUT CREDIT CARD GUARANTEE
Thank you for your request. Please wait for confirmation or contact us.

Source language: English

I'd like to request a room with access to the garden. 2

Target language: Czech

Chci pokoj s přístupem do zahrady. 4

Backward translation:

I want a room with access to the garden. 5

Paraphrases:

I'd like to ask the room with access to the garden.

I'd like to ask you for a room with access to the garden.

I would like to ask you for a room with access to the harbor.

I'd like to ask you to get the room to the hotel. 7

I'll ask you for a room with access to the port.

I'd like to ask you a room with access to the garden.

Examples

Inter	I teach my son English with the 'Learning Time with Timmy' series on Youtube.
Final	Učím svého syna Angličana /Englishman/ se seriálem „Learning Time with Timmy“ na Youtube.
Inter	Why was I not able to make a payment by mobile?
Final	Proč jsem nemohl zaplatit za /for/ mobil?
Inter	Why was I not able to make a payment from my mobile?
Final	Proč jsem nemohl zaplatit z mobilu?
Inter	What documents do I need to have if my ID has expired ?
Final	Jaké doklady potřebuji, když mi vypršel průkaz totožnosti?
Inter	What documents do I need to have if my ID is out of date ?
Final	Jaké dokumenty potřebuji, když je můj průkaz zastaral /got obsolete/?

- Inbound vs. Outbound MT problem definition
- Backtranslation helps in confidence
- MT system speed is important even in comparison to objective quality