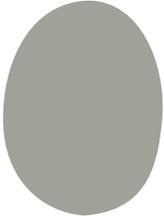




Language Translation as a Socio-Technical System

Case-Studies of Mixed-Initiative Interactions



Sebastin Santy*, Kalika Bali, Monojit Choudhury, Sandipan Dandapat,
Tanuja Ganu, Anurag Shukla, Jahanvi Shah, Vivek Sheshadri

What is Translation?

English: COMPASS is an awesome conference!



Hindi: COMPASS एक शानदार सम्मेलन है!

French: COMPASS est une conférence géniale!

Spanish: COMPASS es una conferencia impresionante!

Simplified Chinese: COMPASS 是一个很棒的会议



How is it usually done?

Human Translation

- Language Service Providers (LSPs)
- Professional Translators
- Amateur or Community Translators



Machine Translation

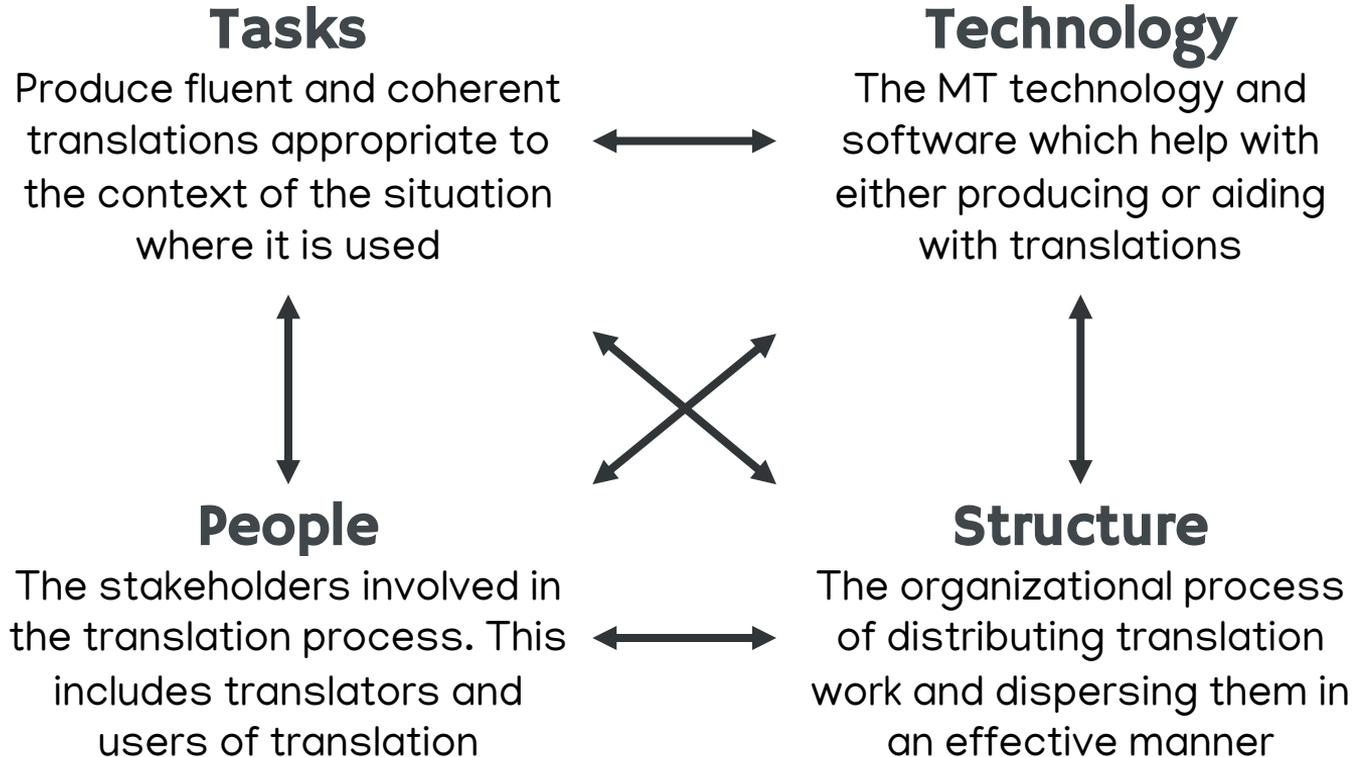
- Custom MT systems (Rule-based/Neural)
- Bing/Google Translate Interface/APIs



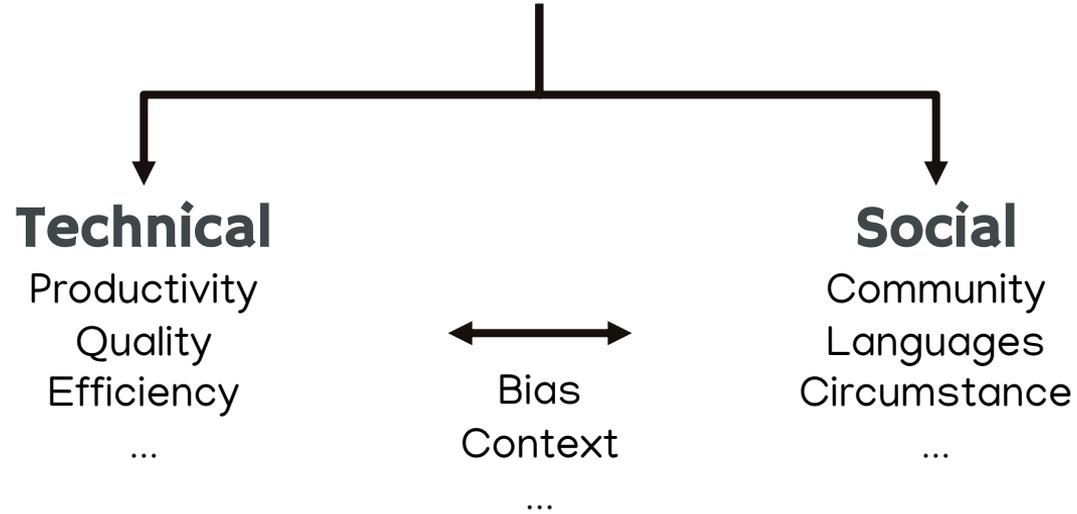
Socio-Technical Systems

Interaction between
Technology, People and Society

MT as Socio-Technical System



Socio-Technical Challenges for MT



Mixed-Initiative Translations

Interaction between human translators
and machine translation systems

Human vs. Machine Translations

Human Translation

- Contextual and Pragmatic
- Knowledge Aware
- Metaphor Understanding

- High Skilled Labor
- Slow and Unscalable
- Expensive

Machine Translation

- Fast, Scalable, On-Call
- Several Languages
- Diverse Outputs

- Literal Translations
- Massive Training Data
- Biased, Non-explainable

Case Studies of Mixed-Initiative Translations



Case I

Enhancing the
Productivity of
Amateur Translators



Case II

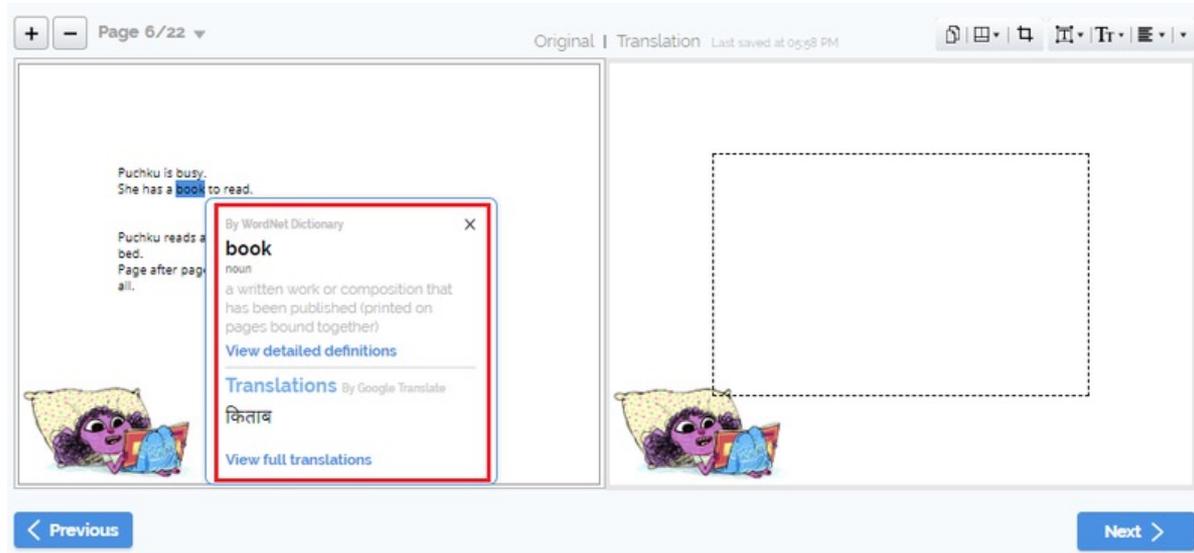
Crowd-Sourcing
Translations in Low
Resource Language



Case III

Incorporating Visual
Context during
Translations

Case I: Enhancing Productivity of Amateur Translators



Case I: Enhancing Productivity of Amateur Translators

Challenges

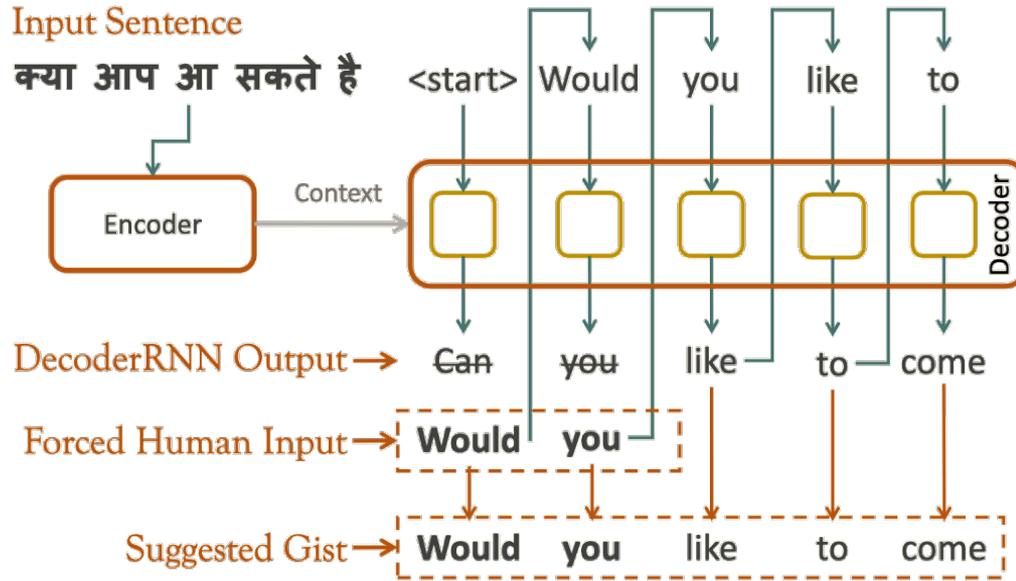
HT: Amateur Translators

MT: Creative Translations

HT: Wide Array of Languages

MT: Readability Grade

Case I: Enhancing Productivity of Amateur Translators



Case I: Enhancing Productivity of Amateur Translators

The screenshot displays a translation interface. At the top, there are two buttons: "Translate" (highlighted in blue) and "Preview". Below these, the input text is "क्या आप आ सकते हैं" (Kya aap aa sakte hai), with each word in a colored box. To the right, performance metrics are shown: "Perplex: 9.3" and "Average: -2.23". The main text area contains "Wo|uld you like to come", with a dropdown menu open below it. The dropdown menu lists five suggestions: "Would you have", "Would you come", "Would you like", "Would you get", and "Would you be".

Translate Preview

क्या आप आ सकते हैं

Perplex: 9.3
Average: -2.23

Wo|uld you like to come

- Would you have
- Would you come
- Would you like
- Would you get
- Would you be

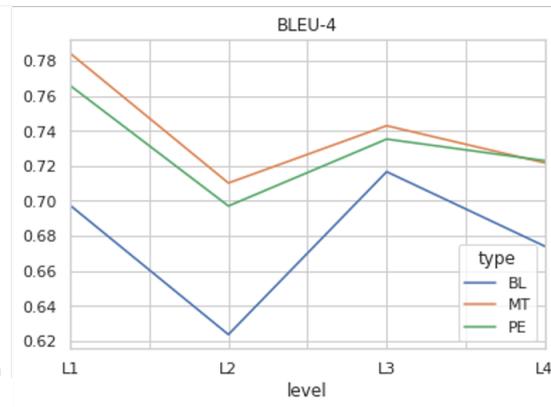
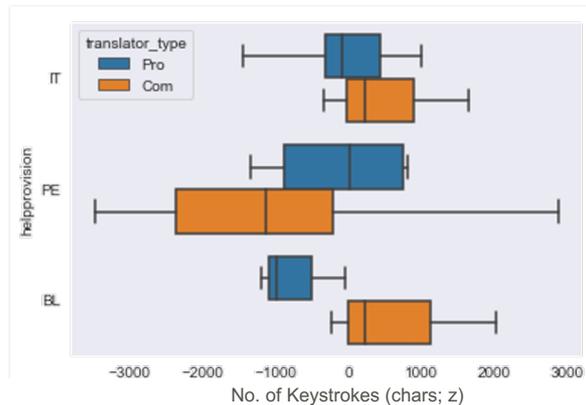
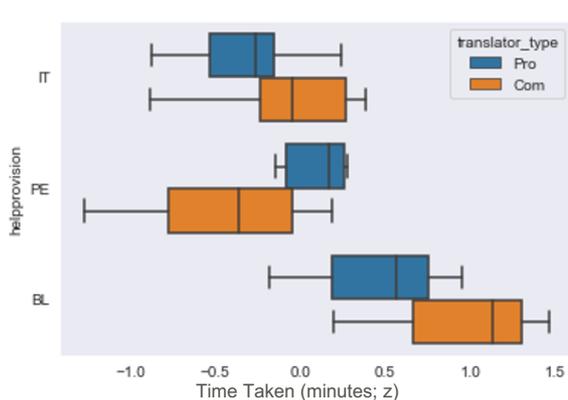
Case I: Enhancing Productivity of Amateur Translators

10 translators – 5 professional and 5 amateur

Languages – Hindi to English

Systems – No suggestion or Baseline (BL), Post-Editing (PE) and Ours (IT/MT)

Metrics – Time Taken, No. of Keystrokes, Quality



Case I: Enhancing Productivity of Amateur Translators

Lessons we learnt

- Amateur vs. Professionals are very different
- Suggestions are not always required
- Suggestions only helpful for lower readability levels
- Language of translation matters
- Sufficient context required for translation
- Multiple types of devices used

Case II: Crowd-Sourcing Translations in Low Resource Languages

Challenges

Low Resource Language

Lack of Personal Computers

Network Connectivity



Case II: Crowd-Sourcing Translations in Low Resource Languages



Case III: Incorporating Visual Context during Translations

Challenges

Lack of Visual Context

Preserving Webpage Structure

Not In-Situ Translations

Case III: Incorporating Visual Context during Translations

Challenges

Preserving Webpage Structure

Joyful
storybooks for
every child.

हर्षित स्टोरीबुक के
लिए
हर बच्चा.

Each child for a joyful
story book

हर बच्चे के लिए
हर्षित कहानी
पुस्तिकाएं।

Joyful story books for
every child

Case III: Incorporating Visual Context during Translations

FEATURED

Books we love to read

A wide range of affordable storybooks to appeal to children, our books are written and illustrated by



Butterfly Smile

₹ 40

Mathangi Subramanian
by Lavanya Naidu



Ammamma's Macchi

Written by
Illustrated by Rajiv Eipe

Translate Dialog

Detected Sentence

A wide range of affordable storybooks to appeal to

Sentence Translation

बच्चों से अपील करने के लिए सस्ती स्टोरीबुक की एक विस्तृत श्रृंखला, हमारी

Sans Seri

Replace Resend Reset

Quality

Fidelity

Fluency

Verity Fix

Proof Comments

Suggestions/ Recommendations

- Mapping Socio-Demographic Contexts with Technical Needs
- Optimizing Machine Translation for different metrics
- Mixed-Initiative Translations with better Incentives



Thanks

Any questions?

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