

From Human to Social-Centric Tech & AI: Interdisciplinarity in Massively Multilingual Machine Translation

HOW DO WE BUILD INCLUSIVE TECHNOLOGY?



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01 What exactly is human-centered design?

HUMAN-CENTRED TECHNOLOGY

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ABSTRACT: Human-centred technology is an alternative approach to the design of manufacturing systems where the operator is considered an "asset" rather than a "nuisance". A human-centred system utilizes and relies on the operator's skill, knowledge, flexibility and creativity. It also gives him the control over and the responsibility for the system. This paper gives a short introduction into human-centred technology and illustrates the concept of human-centred CIM by outlining the project on a "Human-Centred Machining Cell" at Imperial College. In addition it points to related projects which have either just finished, such as the ESPRIT 1217(1199) project on "Human-Centred CIM" or in which the work started earlier is being continued. The paper does not present completely new findings or developments, but it attempts to summarize and update the present situation in a number of projects in the field without claiming to be comprehensive.

KEYWORDS: appropriate technology; human-centred design; distributed manufacturing planning and control; skill-based manufacturing; production islands, human engineering.

02 How did human-centered tech become the hottest thing in town?

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FOURTH INDUSTRIAL REVOLUTION

Human-centric tech will make AI faster and fairer. Here's how.

03 When technologists say they are doing human-centered work, what does it mean?

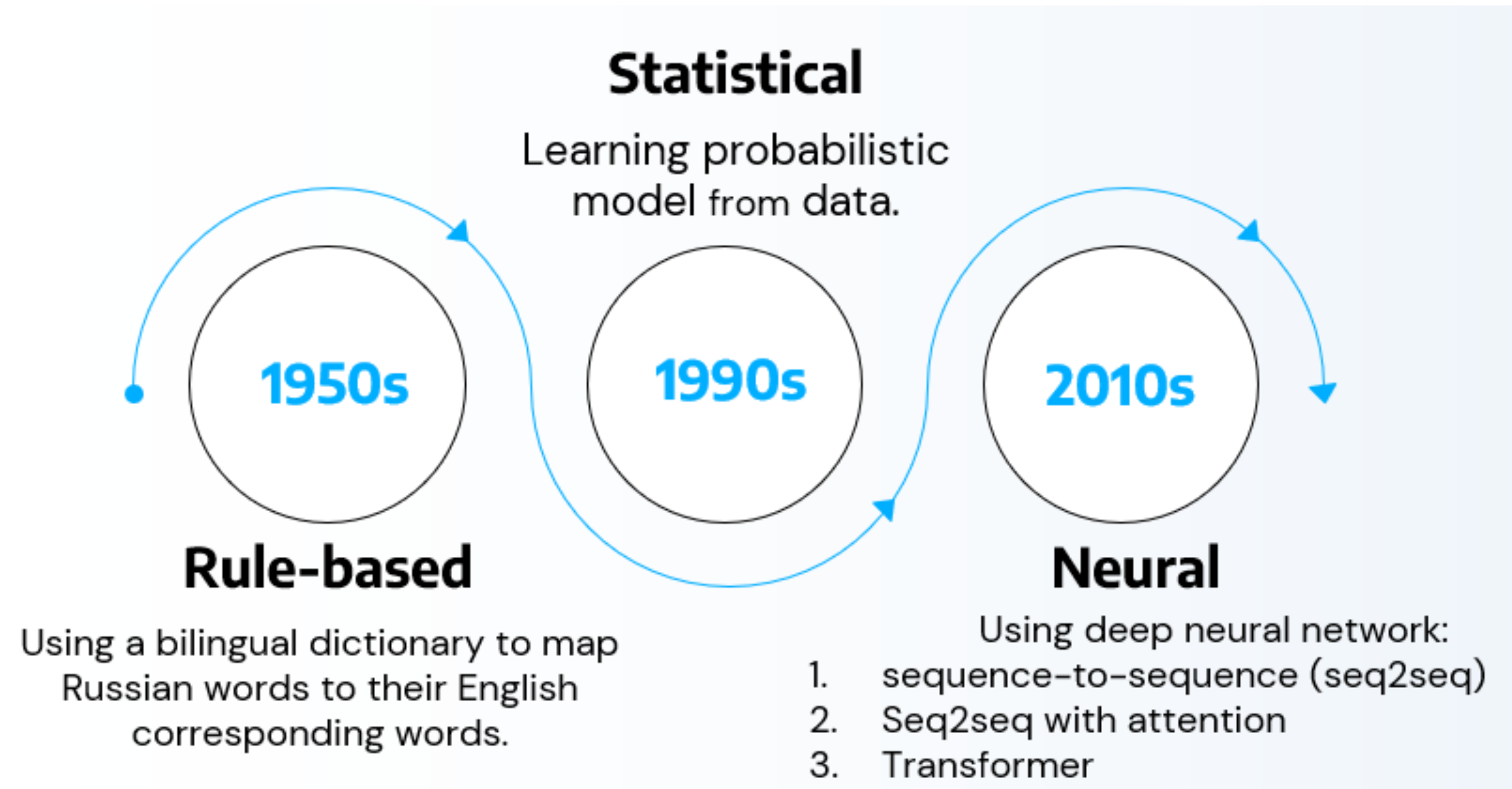
04 What benefits do we gain if we go from human to social-centric tech & AI?

Micro (individuals)

Meso (communities, groups, organizations)

Macro (sociopolitical and cultural contexts, institutions)

05 A Brief History of Translation



06

Project goals

1. Double the number of languages offered by machine translation to beyond 200 by focusing on **low-resource languages**
2. Deploy 'true' multilingual translation in a single model
BI: *Russian > Eng > Japanese*
ML: *Russian > Japanese*
3. Ensure high-quality and **safe** translation
4. Open-source everything

07 How did we ground it socially?



No Language Left Behind

200+ Low-Resource Languages



Studies with Speakers
of Low-Resource
Languages



Automatic Dataset
Creation for Hundreds
of Languages



State-of-the-Art
Models for 200
Languages



Automatic & Human Evaluation
with FLORES-200 and
Toxicity-200



**08 How does social scientific research
benefit technical work?**

09 The Promises of Social-Centric MT

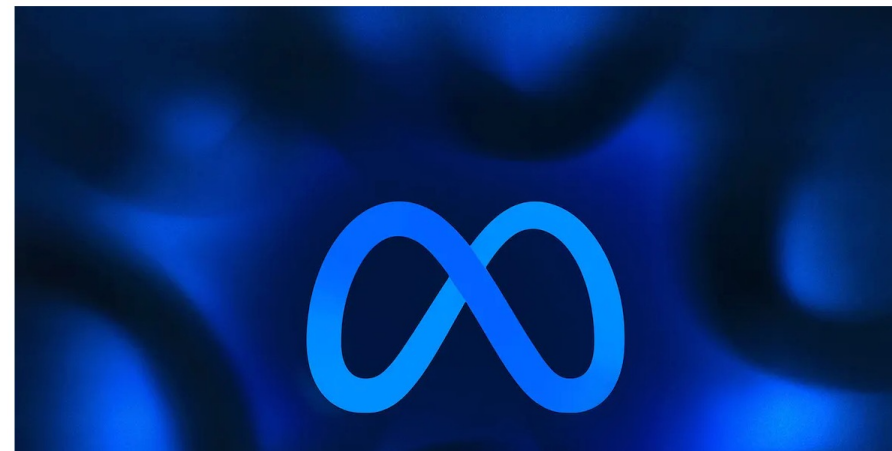
CNET Your guide to a better future

News > Social Media

Meta's 'No Language Left Behind' AI Can Now Translate 200 Languages

SCIENCE / TECH / ARTIFICIAL INTELLIGENCE

Meta open sources early-stage AI translation tool that works across 200 languages



/ Meta's ambitions to build a
'universal translator' continue

DISCOVER LATEST QUARTZ AFRICA FEATURED EMAILS

SPEAK MY LANGUAGE

Meta's AI can now translate more African languages, helping create a more inclusive internet

= the decoder

AI in practice Feb 23, 2022

No more language barriers: Meta wants to fulfill "humanity's dream"

10 The Limits of Social-Centric MT



Emily M. Bender
@emilymbender

Why would you name a project/paper after a failed US education policy?

11:01 AM · Jul 6, 2022 · TweetDeck

future tense

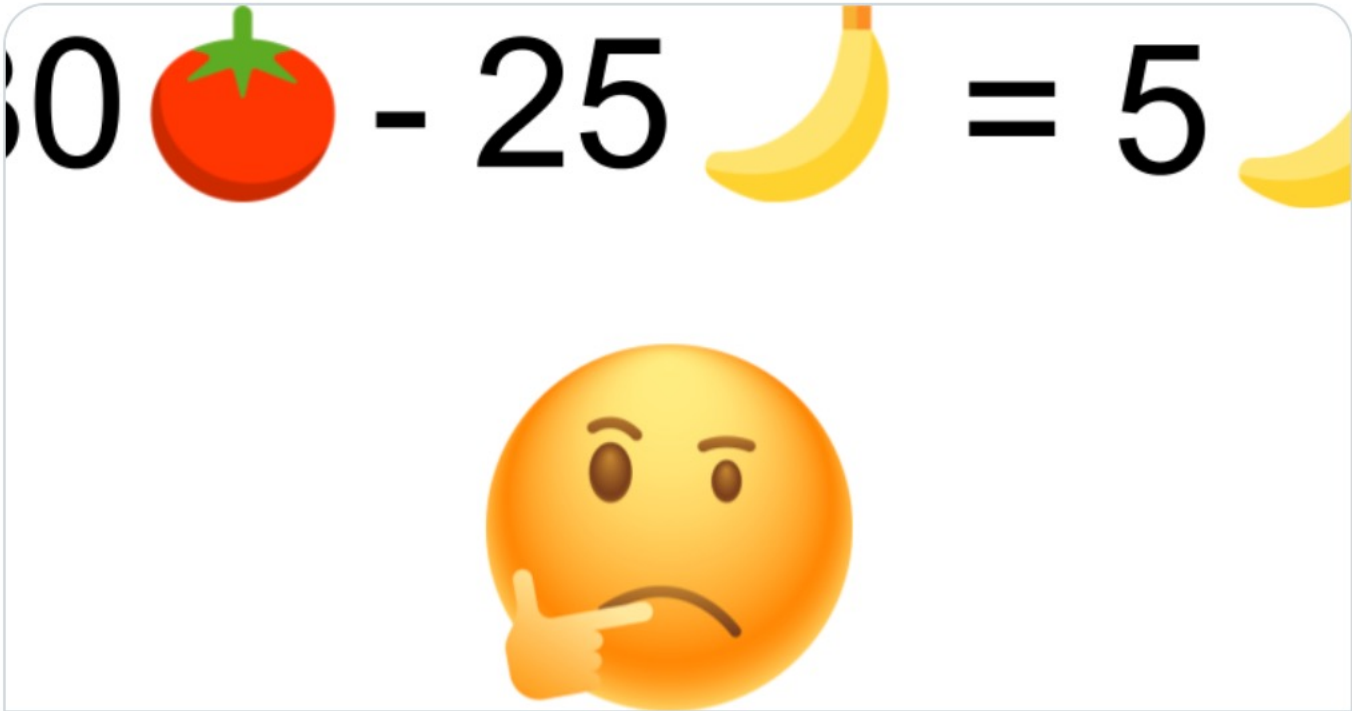
Death by Machine Translation?

BY SOFIA QUAGLIA SEPT 21, 2022 • 5:50 AM



Benjamin Marie @bnjmn_marie · Jul 27

I fully reviewed @MetaAI No Language Left Behind's automatic evaluation #NLLB, and I have a lot to say about it... So I started a blog:



medium.com

Science Left Behind

Beginning of July, Meta AI published an outstanding work: No Language Left Behind (NLLB).



Jonathan Frankle @jefrankle · Jun 22

Why do big companies have expensive academic research labs? I got an interesting survey that seems to shed light on that. In this case, it was from Meta about the "**No Language Left Behind**" project (which is cool even if it's being used to whitewash the company's reputation).

language translation model helps people access to translations in their preferred language

Strongly Disagree

Disagree

Neither Agree nor Disagree

Agree

Strongly Agree

Meta AI works to solve important social challenges

Strongly Disagree

Disagree

Neither Agree nor Disagree

Agree

Strongly Agree

Meta AI develops AI technology/implementations responsibly

Strongly Disagree

Disagree

Neither Agree nor Disagree

Agree

Strongly Agree

11 The key questions

How can we ensure that communities that will be impacted by a technology gets a say in how such technologies are built?

How can we ensure ownership is fair and just?

How do we ensure that open-source does what it truly intends to do?

How can we take a more proactive approach to ensure that the concerns and needs of underserved populations get addressed in a timely manner?

08 Q&A

