THE EU RESEARCH & INNOVATION PROGRAMME
2021 – 2027

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Destination 6: A human-centred and ethical development and industrial technologies

HORIZON-CL4-2023-HUMAN-01-03: Natural Language Understanding and Interaction in Advanced Language Technologies (AI Data and Robotics Partnership) (RIA)
Natural Language Understanding and Interaction in Advanced Language Technologies

(AI Data and Robotics Partnership)
CHALLENGE

Effective AI-based human-machine interaction and collaboration
TOPIC BUDGET EU CONTRIBUTION PER PROJECT TYPE OF ACTION TRL

20 Mio 6-8 Mio RIA TRL 2-5

(3 projects)
What are we looking for?
EXPECTED OUTCOMES (1/4)

Development of natural language understanding and interaction in advanced language technologies, based on context-aware language models able to

• further integrate long-term general knowledge and
• derive meaning

in order to

• develop automated reasoning
• and enhanced interaction skills.
EXPECTED OUTCOMES (2/4)

Effective multilingual and bias-controlled language models, capable of

- learning from smaller language corpora,
- efficient in computing and
- respectful of European values.
EXPECTED OUTCOMES (3/4)

AI systems and solutions based on novel multilingual pre-trained language models that have assimilated

• cross-language and
• cross-cultural knowledge through
• textual and
• speech input.
EXPECTED OUTCOMES (4/4)

Higher uptake of innovative language technology solutions by European companies, providing extensive language coverage of AI-enabled applications and services in Europe.
SCOPE (1/6)

Improve context-aware human-machine interaction to increase
- understanding and
- exploitation of
- the interaction context and
- content in multimodal settings,
thus increasing responsiveness of interactive AI solutions, such as
- smart assistants,
- conversational and dialogue systems,
- content generation models, etc.
**SCOPE (2/6)**

..support and enhance seamless human-to-human communication across languages e.g. by means of

- automatic translation or
- interpretation (incl. automatic subtitling) in real time

with a greater understanding of

- the communication context and
- the meaning involved in it.
SCOPE (3/6)

AT LEAST ONE OF THE FOLLOWING:

➢ Developing novel methods and techniques for producing context-aware models, which incorporate
  • factual-based structured and
  • unstructured knowledge
  in
  • broader situational and
  • temporal information, and continual learning to achieve natural
  • behaviour and
  • reasoning
  in all intended settings.
Improving large pre-trained multilingual language models to cover a large set of languages, with

- a high level of natural language understanding and
- the ability to efficiently add more languages, including low-resource ones, via
  - transfer or
  - language-independent learning methods.
Improving language-independent and bias-controlling algorithms and methods for language model training and usage efficiency in terms of data, time and energy consumption while retaining performance, accuracy and general usability.
Developing language representations, encompassing an effective combination of multilingual, symbolic and sub-symbolic knowledge and allowing systems to perform cross-cultural reasoning in various contextual tasks.
CONDITIONS (1/2)

✓ Appropriate expertise, incl. data science, computer science, computational linguistics, machine learning, natural language processing, biases in language models, etc.

✓ Building on existing standards and contributing to standardisation.

✓ Resulting in findable, accessible, interoperable and reusable research data including metadata schemas and ontologies.
CONDITIONS (2/2)

✓ Embedding mechanisms to assess and demonstrate progress (qualitative and quantitative KPIs, benchmarking and progress monitoring, as well as illustrative application use-cases demonstrating concrete potential added value).

✓ Sharing communicable results with the European R&D community through the AI-on-demand platform, Common European Data Spaces (esp. Language Data Space), etc.

✓ Participation in the innovation challenges.
What do we NOT want?

- Simple copying / refreshing of existing ideas/technologies/solutions.
- Proposals where language modelling technologies and their evident applications are not the main subject.
- Proposals with a vague / imprecise description of the action.
Topic evolution

HORIZON-CL4-2021-HUMAN-01-13
eXtended Reality Modelling (RIA)

HORIZON-CL4-2023-HUMAN-01-03
Natural Language Understanding and Interaction in Advanced Language Technologies (AI Data and Robotics Partnership) (RIA)
Current project portfolio

SERMAS (Socially-acceptable Extended Reality Models and Systems)
https://cordis.europa.eu/project/id/101070351

UTTER (Unified Transcription and Translation for Extended Reality)
https://cordis.europa.eu/project/id/101070631

VOXReality (Voice driven interaction in XR spaces)
https://cordis.europa.eu/project/id/101070521
Key actors

Leading research entities with expertise in:

➢ *Artificial Intelligence*, especially *Natural Language Processing, Data Science, Computational Linguistics*, etc.

Industrial users of language modeling technologies:

➢ *Communication, Telepresence, Smart Assistants, Chatbots, Content Generation, Internet of Things, Robotics*, etc.
Additional/ background documents

https://www.european-language-technology.eu/
https://live.european-language-grid.eu/
https://european-language-equality.eu/
https://www.lr-coordination.eu/
Future Outlook

Artificial Intelligence Index Report 2022
Stanford University
https://aiindex.stanford.edu/report/

2022 Tech Trends Report, Artificial Intelligence
Future Today Institute
https://futuretodayinstitute.com/trends/

State of AI Report 2022
Nathan Benaich, Ian Hogarth
https://www.stateof.ai/
More information

Call opening: 8/12/2022
Call deadline: 29/03/2023
Call page: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl4-2023-human-01-03
Thank you for your questions

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http://ec.europa.eu/horizon-europe