



MULTI-TASK  
MULTI-LINGUAL  
MULTI-MODAL



Funded by the Horizon 2020 Framework Programme  
of the European Union

Anabela  
Barreiro



European Language  
Resource  
Coordination



[www.cost.eu/actions/CA18231/](http://www.cost.eu/actions/CA18231/)

[www.multi3generation.eu/](http://www.multi3generation.eu/)

Multi3Generation  
COST Action  
CA18231

# Multi3Generation

## Current Contributions and Future Perspectives





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## Aims

Foster an **interdisciplinary network** of research groups working on distinct aspects of **natural language generation** (NLG) with an emphasis on any combination of the following:

- **multilingual** models
- **multitask** learning
- **multimodal** uses



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Kick-off meeting  
@ Brussels, October 2019



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# COST Action Management Committee



COST Action CA18231,  
Multi3Generation: Multi-task, Multilingual, Multi-modal Language Generation (Multi3Generation)

List of MC participants

Number of COST members represented: 33

Number of ITC countries: 19

<https://www.cost.eu/actions/CA18231/>

## Action Details

- MoU - 048/19
- CSO Approval date - 04/06/2019
- Start date - 09/09/2019
- End date - 08/09/2023

<https://multi3generation.eu/>

## How can I participate?

- Read the Project Description [MoU](#)
- Inform the Main Proposer/Chair of your interest ([email](#))
- [Apply](#) to join your Working Groups of interest
- Please note, Management Committee nominations are carried out through the [COST National Contact Points](#)



### Main Contacts

#### Action Contacts



Dr Anabela BARREIRO  
Action Chair  
+351213100351  
[anabela.barreiro@inesc-id.pt](mailto:anabela.barreiro@inesc-id.pt)



Dr Mirela ALHASANI  
Action Vice Chair  
+355 4 22 32 086  
[m.alhasani@rocha.edu.tr](mailto:m.alhasani@rocha.edu.tr)

Former:

Grant Holder - [University of Copenhagen](#)

Action Chair - Prof. [Isabelle Augenstein](#)

### COST Staff



Dr Giuseppe LUGANO  
Science Officer  
+3225333822  
[g.lugano@cost.eu](mailto:g.lugano@cost.eu)



Ms Olga GORCZYCA  
Administrative Officer  
+3225333866  
[Olga.Gorczyca@cost.eu](mailto:Olga.Gorczyca@cost.eu)



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#	CTRY *	Title	Firstname	Lastname	Group	Position	Email	
1	PT	Dr	Anabela	Barreiro	MC Members	MC Chair	anabela.barreiro@inesc-id.pt	INESC-ID
2	AL	Dr	Mirela	Alhasani	MC Members	MC Vice-Chair		EPOKA UNIVERSITY
3	CZ	Prof	Pavel	Smrz	MC Members	MC Member		Brno University of Technology
4	DE	Prof	Anette	Frank	MC Members	MC Member		Heidelberg University
5	DE	Mr	Jakob	Suchan	MC Members	MC Member		Systems Engineering for Future Mobility
6	DK	Prof	Barbara	Plank	MC Members	MC Member		IT University of Copenhagen
7	ES	Dr	Sergio	Escalera	MC Members	MC Member		University of Barcelona
8	ES	Dr	Elena	Lloret	MC Members	MC Member		Universidad de Alicante
9	EE	Prof	Gholamreza	Anbarjafari	MC Members	MC Member		University of Tartu
10	AL	Dr	Mirela	Alhasani	MC Members	MC Member		EPOKA UNIVERSITY
11	AL	Dr	Enriketa	Sogutlu	MC Members	MC Member		University College Bedër
12	FR	Dr	François	Portet	MC Members	MC Member		Universite Grenoble Alpes
13	FR	Dr	Hady	Elsahar	MC Members	MC Member		Naver Labs Europe
14	FI	Dr	Mika	Hämäläinen	MC Members	MC Member		Rootroo Ltd
15	FI	Dr	Khalid	Alnajjar	MC Members	MC Member		Rootroo Ltd
16	UK	Dr	Dimitra	Gkatzia	MC Members	MC Member		Edinburgh Napier University
17	UK	Prof	Lucia	Specia	MC Members	MC Member		Imperial College London

...

<https://www.cost.eu/actions/CA18231/#tabs+Name:Working%20Groups%20and%20Membership>





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Multi3Generation includes  
peer-researcher-  
technologist-heroes from  
Ukraine



Global Challenge

## Lisbon Meeting, October 2021

6 October 2021

**Meeting Title:** Lisbon Meeting

**Meeting Type:** MC Meeting/WG Meeting

**Meeting Dates:** Wednesday, 06, October 2021, Thursday, 07, October, and Friday, 08, October 2021

**Meeting Venue:** hybrid (in-person at Instituto Superior Técnico – Universidade de Lisboa and online via Zoom)

**Local Organiser Institution:** INESC-ID Lisboa

**Local Organiser:** Anabela Barreiro (Chair from INESC-ID Lisboa)





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## Challenges

- **Data and information representations:** images, videos, knowledge-bases and linguistic/semantic resources, among others
- **Machine Learning** when applied to NLG: inputs to be mapped to different correct outputs
- **Interaction:** applications challenges to NLG (e.g. Dialogue Systems, Conversational Search Interfaces, and Human-Robot Interaction)
- **Knowledge Base exploitation:** structured knowledge is key to NLP tasks, including NLG

Multi3Generation  
Challenges



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## Working Groups

- WG 1 – Grounded multimodal reasoning and generation
- WG 2 – Efficient Machine Learning algorithms, methods, and applications to language generation
- WG 3 – Dialogue, interaction and conversational language generation
- WG 4 – Exploiting large knowledge bases and language resources for multimodal NLG tasks
- WG 5 – Industry and End-User Liaison





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## **COST support via Conference Grants and STSM**

- COST contributes to expenses for accommodation, travel and subsistence according to a regulated COST scheme

### **1– Grants for Young Researchers (ECI)**

- Any young researcher from an Inclusiveness Target Country (ITC) that is member of the COST Action can apply to Conference Grants.

<https://multi3generation.eu/funding-opportunities/itc-grants/>

### **2– Short-Term Scientific Missions (STSM)**

- STSMs between members of a COST Action target especially ECI.
- STSM accomplished in GP1 and GP2 (9 missions accomplished)

<https://multi3generation.eu/funding-opportunities/short-term-scientific-missions/>



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## Training Schools

### 1. **Representation mediated multimodality**

Grounded representation, reasoning, and learning for interactive interpretation

September 26-30, 2022

Schloss Etelsen, Germany

<https://codesign-lab.org/school2022/index.html>

### 2. **Automatically creating text from data**

Data-to-text and creative language generation

September 9-23, 2022

Università Ca' Foscari, Venice, Italy

[School website to be announced soon](#)



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## Survey on Neural Natural Language Generation (NNLG) – WG2

Journal of Artificial Intelligence Research 73 (2022) 1-15

Submitted 04/2021; published 03/2022

### Neural Natural Language Generation: A Survey on Multilinguality, Multimodality, Controllability and Learning

Erkut Erdem  
Menekşe Kuyu  
Semih Yagcioglu  
*Hacettepe University, Ankara, Turkey*

ERKUT@CS.HACETTEPE.EDU.TR  
MENEKSE.KUYU@HACETTEPE.EDU.TR  
SEMIH.YAGCIOGLU@HACETTEPE.EDU.TR

Anette Frank  
Letitia Parcalabescu  
*Heidelberg University, Heidelberg, Germany*

FRANK@CL.UNI-HEIDELBERG.DE  
PARCALABESCU@CL.UNI-HEIDELBERG.DE

Andrii Babii  
Oleksii Turuta  
*Kharkiv National University of Radio Electronics, Ukraine*

ANDRII.BABII@NURE.UA  
OLEKSII.TURUTA@NURE.UA

Aykut Erdem  
*Koç University, Istanbul, Turkey*

AERDEM@KU.EDU.TR

Iacer Calixto  
*New York University, U.S.A.  
University of Amsterdam, Netherlands*

IACER.CALIXTO@NYU.EDU

Barbara Plank  
*LMU Munich, Germany  
IT University of Copenhagen, Copenhagen, Denmark*

BPLANK@ITU.DK

Elena Lloret  
*University of Alicante, Alicante, Spain*

ELLORET@DLISIUA.ES

Elena-Simona Apostol  
Ciprian-Octavian Truica  
*University Politehnica of Bucharest, Bucharest, Romania*

ELENA.APOSTOL@UPB.RO  
CIPRIAN.TRUICA@UPB.RO

Branislava Sandrih  
*University of Belgrade, Belgrade, Serbia*

BRANISLAVA.SANDRIH@FIL.BG.AC.RS

Sanda Martinčić-Ipšić  
*University of Rijeka, Rijeka, Croatia*

SMARTI@UNIRI.HR

Gábor Berend  
*University of Szeged, Szeged, Hungary*

BERENDG@INF.U-SZEGED.HU

Albert Gatt  
*Utrecht University, The Netherlands  
University of Malta, Malta*

A.GATT@UU.NL

Grazina Korvel  
*Vilnius University, Vilnius, Lithuania*

GRAZINA.KORVEL@MIF.VU.LT

A survey of recent advances in  
NNLG from 4 different dimensions:

- multilinguality
- multimodality
- learning strategies
- controllability

**7 NLG Tasks:** Machine Translation,  
Description Generation, Automatic Speech  
Recognition, Abstractive Summarization,  
Text Simplification, Question Answering  
and Generation, and Dialogue Generation.

*To appear (very soon) at Journal of Artificial Intelligence  
Research (JAIR)*



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## Current Contributions – WG3

- Human Computer Interaction tasks in multilingual and multimodal scenarios – applying NLG models to conversational agents
  - New **answer generation techniques** where the (human) agent will receive suggestions
  - New **techniques for conversational quality estimation** and sentiment analysis
  - Creation of **multilingual datasets for low resourced languages**
- Survey on affective agents/answer generation adaptations to chat data
- Survey on metrics for assessing the quality of the dialogue
- Report on available multilingual datasets for conversational data
- Creation of multilingual datasets for low resourced languages
- Contribution to responsible AI initiatives (modalities with severe ethic impacts)



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## Current Contributions – WG4

- In-depth analysis and review of methods to incorporate (efficiently) and enrich structured (multimodal) KBs into NLG models
- Report about freely available data-to-text NLG training datasets
- Survey about theories of semantic meaning representation and conceptual combination and how they can be tested through NLG
- Training school about creative NLG (Venice, September 2022)
- Survey on creative NLG
- Possible uses of NLG in clinical linguistics - use of behavioural / psycholinguistic datasets (association norms, semantic priming, etc.) in NLG



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## Future Research Projects

- **Monolingual/multilingual paraphrase generation: development of paraphrasaries and paraphrasing applications**
  - Generate paraphrases via linguistic resources; reuse paraphrases extracted from parallel texts (language/literature teaching).
  - Alignment tools, alignment of monolingual/multilingual paraphrases, and development of paraphrasaries as the kick-start of a paraphrasing tool.
- **Digitalization of humanities**
  - Humanities and social sciences need to adapt to the new digital development in teaching andragogy and interdisciplinary research.
  - Pave the way to the new perspective of enabling end-users (academic instructors and students of humanities programs) gain digital competence in using semantic, lexical, proofreading and discourse assessment digital tools to achieve the learning goals.





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