



# #TranslatingEurope

Workshop

***Artificial intelligence  
and translation technologies:  
what is the state of play?***

15 January 2021

Online on Zoom

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**UNINT**  
Università  
degli Studi Internazionali di Roma

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## Speakers and abstracts

### **Markus Foti (DGT, European Commission): “eTranslation: Cutting-edge machine translation for the EU”**

#### **Abstract**

Markus Foti will describe how and why the European Commission took up the challenge of creating its own cutting-edge machine translation system and the challenges faced when building today's neural machine translation systems.

#### **Bio**

Markus Foti is an Italian, born in Canada of a German mother. Perhaps it is no surprise that he has been fascinated by languages from birth. This passion led him to take a position as a translator at the European Commission over 20 years ago. He then was able to combine this with an interest in technology, and more recently, artificial intelligence. His work is now dedicated to bringing the best machine translation possible to the European Union.

### **Giuseppe Daniele Falavigna & Marco Turchi (FBK): “Deep neural approaches for automatic speech recognition and spoken machine translation”**

#### **Abstract**

Automatic speech recognition (ASR) underwent a revolution after the advent of deep neural networks. Traditional approaches based on the usage of both acoustic models and language models are going to be replaced by end-to-end neural models capable of learning the acoustics and linguistic information contained in the speech. Furthermore, the impressive improvements of ASR performance have greatly reduced the constraints imposed on the users, allowing to cover more application areas, such as spontaneous dialogue and distant speech recognition, unpredictable until a few years ago. Similarly to ASR, the usage of neural models has allowed automatic machine translation (MT) technology to achieve excellent performances, even on less widely spoken languages, so that many commercial products and services are now available for helping human translators. In spoken language translation, where the audio in one language needs to be translated into text in another language, the concatenation of ASR and MT components in a cascade architecture has been the dominant technology for years. Similarly to ASR, the AI revolution has made it possible to have a single model that directly translates from the audio input to text in different languages. The talk will summarize the present state of the art in ASR and MT and will provide an overview of the related application fields and performance, particularly focusing on spoken language translation and interpreting technology.

#### **Bio**

**Daniele Falavigna.** Senior researcher and Head of the *SpeechTek* research unit at FBK. He teaches courses on "linguistic interfaces" at the University of Trento and has served as scientific reviewer at both Interspeech and ICASSP conferences for many years. He has co-authored more than 100 scientific publications and collaborates with industrial companies in the development of applications using ASR technologies. He is the co-organizer of the challenge on ASR for non-native children's speech, held at the Interspeech 2020 conference. His research interests include: acoustic modelling for ASR, machine learning for ASR applications, ASR for education applications.

**Marco Turchi** is the head of the machine translation unit at FBK. He received his PhD. in Computer Science from the University of Siena (Italy) in 2006. Before joining FBK in 2012, he worked at the European Commission Joint Research Centre (Italy), at the University of Bristol, at the Xerox Research

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Centre Europe, and Yahoo Research Lab. His research activities focus on various aspects of sequence-to-sequence modelling applied to machine translation, speech translation and automatic post-editing. He has co-authored more than 160 scientific publications and served as a reviewer for international journals, conferences, and workshops. He is the co-organizer of the Conference of Machine Translation, of the Spoken Language Translation workshop and the automatic post-editing evaluation campaigns. He has been involved in several EU projects such as *SMART*, *Matecat*, *ModernMT* and *QT21*. He was the recipient of the Amazon *AWS ML Research Awards* on the topic of end-to-end spoken language translation in rich data conditions.

## **Luca De Franceschi (Product Manager, *Translated*): “How automation is reshaping the localization and audiovisual industry”**

### **Abstract**

Bridging the gap between machine and humans in translation is a challenge that *Translated* has been taking on since its foundation. The demand for high-quality localized content has skyrocketed since the early 2000s and it looks like it will not stop anytime soon. The market is also seeing unprecedented growth in the need for transcription, subtitling and dubbing services and, as we have already experienced with translation and localization, the standard human-only processes cannot keep up with demand. At *Translated*, we believe that machines and humans can work together and that this symbiosis allows linguists to focus on what they do best: craft high quality, reliable and engaging multilingual content. In this presentation, we will give a sneak peek at three of the main products we are developing for real-time transcription and translation, subtitling, and we will show how our state-of-the-art adaptive MT engine is integrated in our proprietary CAT tool.

### **Bio**

Luca De Franceschi received his MA Interpreting and Translation from Università degli Studi Internazionali di Roma- UNINT in 2015. He first joined *Translated* as a Project Manager in 2015, managing translation projects for private customers, companies and key clients. Luca is now Product Manager and his main responsibilities include *MateCat*, *Matesub*, *TranslationOS* and enterprise clients integrations, for which he curates the design of features, QA processes and support experience, trying to strike a balance between user feedback and product strategy to prioritise product requirements and feature implementation.

## **Gorizio Ciancarelli & Filippo Tessaro (*PerVoice*): “The value of speech digitalisation”**

### **Abstract**

PerVoice is an Alwavave company, part of the AlwavivA Group. Born in 2007 as a spin-off of the research laboratories of Fondazione Bruno Kessler in Trento, PerVoice was the first Italian company to offer a complete portfolio of technological solutions for voice recognition, today available in over 30 languages. Today it is a leader in the voice-recognition technology sector. PerVoice technologies use advanced Machine Learning algorithms and Neural Networks for the transcription of speech with the utmost simplicity and accuracy. The outline of the talk is as follows:

- PerVoice at a glance
- Successful use cases of ASR and MT technologies
- Spontaneous speech translation technology

### **Bio**

#### **Gorizio Ciancarelli**

Gorizio Ciancarelli is Client Manager at PerVoice SpA. Currently, Gorizio oversees voice digitisation projects using ASR (Automatic Speech Recognition) and MT (Machine Translation) technologies. The

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main projects are guiding market demands for the Media Monitoring, Contact Center, Medical and Verbalisation sectors and social and Multilanguage's topics.

## **Filippo Tessaro**

Filippo Tessaro is a machine learning engineer at PerVoice. Currently, he is involved in research and development in the innovation lab, in particular the study of new technologies to improve the quality of machine translation and speech recognition systems. Filippo graduated last month with a Master's degree in computer science with a thesis concerning the development of a real-time speech translation system. The thesis was done in collaboration with PerVoice

## **Moritz Schaeffer (University of Mainz-Germesheim): “Error Recognition during Post-editing”**

### **Abstract**

The talk will present three studies which investigate how humans spot errors in existing machine translations. The error recognition process is central to understanding the interaction between translators and machine-translated text and reveals fundamental aspects of how the human translation process unfolds in time. The studies compare novices with professionals and finds fundamental differences in how errors are recognised which can be attributed to participants' amount of professional experience. In addition, different error types and the time course in the recognition process are central in all three studies. The comparison between different error types and their effect on participants' reading and typing behaviour during post-editing makes it possible to study how the human's model of translation reacts to that of the MT system. As such, error recognition is fast becoming the default mode translators operate in as post-editors, which means that translation production, as an object of study, is shifted to the design of automated systems; thus, understanding how humans spot and correct errors is not only likely to be the central focus of studies trying to uncover human cognitive translation mechanisms, but will also be extremely useful for those who design interfaces that connect the machine and the human translator.

### **Bio**

Moritz Schaeffer received his PhD from the University of Leicester in Translation Studies and has since worked as a research assistant at the Center of Research and Innovation in Translation and Translation Technology (CRITT) (Copenhagen Business School), the Institute for Language, Cognition and Computation (University of Edinburgh) and the National Institute of Informatics (Tokyo). He is currently a senior research associate at the Faculty of Translation Studies, Linguistics and Cultural Studies at the Johannes Gutenberg University of Mainz.

## **Federico Gaspari (University for Foreigners “Dante Alighieri” of Reggio Calabria): “We're only human: evaluating machine translation quality in the age of artificial intelligence”**

### **Abstract**

The talk explains why, despite their popularity and clear advantages, automatic metrics are not dependable means to accurately evaluate machine translation (MT) quality when used on their own, for instance due to their reliance on reference human translations as gold standards: with the growing sophistication of neural MT systems powered by artificial intelligence, it is naive to think that one can suitably evaluate them with automatic metrics alone. The pros and cons of some common alternative human approaches to evaluating MT quality are reviewed, including comparative ranking, fluency and adequacy assessment, and error analysis, illustrating their value in specific use-cases. The overview focuses on the profiles of the evaluators required in such scenarios and on the relative complexity and challenges involved in setting up and running these time-consuming and resource-

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intensive types of human evaluation. Finally, the talk discusses an important issue that is receiving increasing attention, namely the benefits of the more demanding document-level over sentence-level MT evaluation: this recognizes that context is key to correctly evaluating MT quality, including with human methods, as several linguistic, discourse and translation phenomena span across (multiple) sentences, and cannot be judged by considering one single isolated sentence (pair) at a time.

## **Bio**

Federico Gaspari teaches English linguistics and specialized translation at the University for Foreigners "Dante Alighieri" of Reggio Calabria (Italy), and is a visiting postdoctoral researcher at Dublin City University (Ireland), where he collaborates on international research projects focusing on machine translation and language technologies. After graduating in Translation Studies from the University of Bologna at Forlì (Italy), he completed an MSc and a PhD in Machine Translation at the University of Manchester (UK) and has held lecturing and research positions at the Universities of Manchester, Salford, Bologna at Forlì and Macerata. His teaching and research interests include translation technologies (with a special focus on machine translation, post-editing and translation quality evaluation), technical and specialized translation, translation theory, corpus linguistics, corpus-based translation studies and English linguistics. He has published widely on these subjects and is a regular speaker at international conferences on these topics.

## **Joss Moorkens (Dublin City University): "The Route to Kanjingo: Developing an accessible multimodal translation interface"**

### **Abstract**

Commercial software tools for translation have mostly been based on the traditional input modes of keyboard and mouse, latterly with a small amount of speech recognition input becoming popular. Over a period of 6 years, our research group investigated the possibilities of incorporating touch within smartphone and laptop translation interfaces, culminating in the development of a web-based translation editing interface that permits multimodal input via touch-enabled screens and speech recognition in addition to keyboard and mouse. The tool also conforms to web accessibility standards. During its iterative development we carried out two usability studies with sighted users and one with blind users. Participants liked the tool and the speech recognition functionality, but perhaps most interesting was the positive response from blind participants, which highlighted how poorly served blind translators have been in translation tool development and the need to improve accessibility in translation interface design

### **Bio**

Joss Moorkens is an Assistant Professor at the School of Applied Language and Intercultural Studies at Dublin City University and a researcher at the ADAPT Centre and the Centre for Translation and Textual Studies. He has authored and contributed to a number of journal articles and book chapters on translation technology, post-editing of machine translation, user evaluation of machine translation, translator precarity, and translation ethics. He is General Co-Editor of the journal Translation Spaces and sits on the board of the European Masters in Translation network.

## **Bart Defrancq/Claudio Fantinuoli (University of Ghent- University of Mainz-Germesheim): "Date the Artificial Booth Mate: what does your ideal match with ASR look like?"**

### **Abstract**

Automatic Speech Recognition (ASR) is expected to offer interpreters state-of-the-art computer-assisted interpreting (CAI) tools and to allow machine-learning techniques to enter the workflow of

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professional interpreters. Promising tools focus on automatic number and term extraction from source speeches. In this paper we present the results of four pilot experiments conducted with different ASR setups and language combinations. Three of the four tests aimed at measuring success of ASR support in the rendition of numbers in short live speeches; one experiment looked into ASR support for the rendition of terms. The results indicate that the quality of rendition of the targeted items improves substantially in the test population. The experiment also laid bare psychological effects in the human-machine interaction such as overreliance on ASR support and a surprising placebo effect due to the mere availability of support. Furthermore, we present a project that aims to design an improved human-machine interface on the basis of the data collected in previous experiments and in an ongoing user's survey.

## **Bio**

**Bart Defrancq** is an Associate Professor of interpreting and legal translation and programme director of interpreter training at Ghent University. Originally a contrastive linguist his current research focuses on simultaneous interpreting at the European Parliament and dialogue interpreting in police and court contexts. He promotes corpus-based research, compiling corpora of speech and interpretation in both aforementioned contexts (EPICG and IMPID), and publishing and editing research in translation and interpreting (Latest: *New Empirical Perspectives on Translation and Interpreting* with Routledge). He is vice-president of CIUTI.

**Claudio Fantinuoli** is a Researcher at the University of Mainz/Germersheim with focus on Natural Language Processing applied to human and machine interpreting (computer-assisted interpreting, speech recognition, speech-to-speech translation). He is a lecturer of Language Technologies, Translation and Conference Interpreting at University of Mainz and at the Postgraduate Center of the University of Vienna. He is consultant for the Speech-to-text unit of the European Parliament and leads the AI innovation at Kudo Inc.

## **Claudio Fantinuoli/Bianca Prandi (University of Mainz-Germersheim): "Framing automatic speech translation from a communicative perspective"**

### **Abstract**

In recent years, machine interpreting (speech translation) has gained momentum thanks to the advances in artificial intelligence. Due to dramatic improvements in the quality of automatic transcription and machine translation, academic and commercial applications have been developed for use in non-professional and semi-professional environments, and they are expected to enter professional settings in the near future. However, little is known about how such systems may perform in real communication settings. Empirical investigation on machine interpreting has so far mostly been conducted within the framework of computer science with the goal of measuring improvements over time and development cycles. Our project aims at closing this gap through a communicative approach that considers, among others:

- The adequacy and efficacy of communication mediated by machine interpreting systems
- The perception of the output by the communication actors depending on the system's design
- The ethical implications of machine interpreting

In our presentation we describe the design of a novel framework to allow the study of machine interpreting from the perspective of the humanities.

## **Bio**

**Claudio Fantinuoli** is a Researcher at the University of Mainz/Germersheim with focus on Natural Language Processing applied to human and machine interpreting (computer-assisted interpreting, speech recognition, speech-to-speech translation). He is a lecturer of Language Technologies, Translation and Conference Interpreting at University of Mainz and at the Postgraduate Center of the

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University of Vienna. He is consultant for the Speech-to-text unit of the European Parliament and leads the AI innovation at Kudo Inc.

**Bianca Prandi** is currently a Ph.D. candidate and a research associate at the University of Mainz/Germersheim. She collaborates with the Postgraduate Centre of the University of Vienna as a lecturer in Computer-Assisted Interpreting and Remote Simultaneous Interpreting. Her current research project focuses on how Computer-Assisted Interpreting tools can enhance interpreters' performance and on exploring the impact of their integration in interpreters' workflow from a cognitive perspective. Her research interests include Computer-Assisted Interpreting, cognition in spoken multilingual communication, and Natural Language Processing.

## **Elena Davitti, Tomasz Korybski, (University of Surrey): "Exploring new workflows with respeaking for real-time interlingual communication: from human-centric to human-in-the-loop"**

### **Abstract**

This talk will present ongoing research activities linked to the Workshop's lead theme and currently implemented at the Centre for Translation Studies (CTS), University of Surrey (UK). These focus on both human-centric and human-in-the-loop workflows for real time interlingual communication. Such workflows have been known for some time thanks to the recent advances in speech recognition technology and the efforts to combine it with machine translation. However, apart from some early attempts (Eugeni 2020, anecdotal evidence from industry stakeholders) there is not much research on the effectiveness of the workflows, and their evidence-based cross-comparisons are not yet available. This gap is the driver behind two ongoing research initiatives at CTS: SMART (Shaping Multilingual Access through Respeaking Technology), a project funded by the Economic and Social Research Council UK, aims to explore how to effectively upskill language professionals to become interlingual respeakers. Drawing on earlier research (e.g. Erasmus+ ILSA Project - Interlingual Live Subtitling for Access), SMART involves not only leading experts on respeaking and interpreting, but also psychologists who will offer important cognitive insights into the intricacies of the upskilling process. MATRIC (Machine Translation and Respeaking in Interlingual Communication) is a related pilot initiative, seeking to compare the fully human speech-to-speech workflow (interpreting) to semi-automated workflows with human (intralingual) respeaking and machine translation through data acquired in an experiment involving professional intralingual respeakers. During the talk we will discuss the approach adopted and methodological challenges arising from the comparison of the different workflows under investigation.

### **Bio**

**Elena Davitti** is Senior Lecturer at the Centre for Translation Studies, University of Surrey (UK). Her research interests include hybrid modalities of spoken language transfer, particularly methods for real-time interlingual speech-to-text and how increasing automation of these processes would modify human-led workflows. Elena is currently leading the 'SMART' project (Shaping Multilingual Access with Respeaking Technology, 2020-2022, Economic and Social Research Council UK, ES/T002530/1) on interlingual respeaking with an international consortium of national and international academic and industrial collaborators, including UNINT, University of Vigo and University of Roehampton. Elena has also published extensively on communicative, interactional and multimodal dynamics of interpreter-mediated interaction (both face-to-face and technology-mediated), and she has been co-investigator on several EU-funded projects on technologies applied to interpreting, particularly video-mediated interpreting (AVIDICUS 3, SHIFT in Orality) and innovations in interpreter education (EVIVA). Elena has been invited to serve on the boards of projects and organisations in her fields of research (e.g. ILSA Advisory Board, GALMA, IATIS, ARTIS).

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**Tomasz Korybski** is Research Fellow at the Centre for Translation Studies, University of Surrey (UK). Drawing on his practical experience as conference interpreter and interpreter trainer at the University of Warsaw, Tomasz now focuses his research activities on Remote Simultaneous Interpreting technology and technology-driven hybrid workflows in interlingual communication, with an emphasis on developing a methodology for conducting comparisons across different interlingual communication workflows. Tomasz is currently involved in the implementation of MATRIC (Machine Translation and Respeaking in Interlingual Communication), a pilot initiative seeking to find out how the output of intralingual respeaking aided by MT compares to conventional interpreter's output in interlingual communication settings.

No registration required. Attendance is free of charge on Zoom:

<https://us02web.zoom.us/j/83178573177>

