UMR IRISA

Activity Report 2025

Team EXPRESSION

Expressiveness in Human Centered Data/Media

D6 – Signal, Image, Language

Université de Rennes | rennes | INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES RENNES | cnrs | Inria | Inserm | CentraleSupélec | IMT Atlantique Bretagne-Pays de la Loire École Mines-Télécom | Université Bretagne Sud ubs

1 Team composition

1.1 Composition

Head of the team

Pierre-François Marteau, Professor, Université Bretagne Sud
Damien Lolive, Professor, Université Bretagne Sud
Arnaud Delhay, Associate professor, Université Rennes

Administrative assistants

Anne Idier, Université Bretagne Sud
Martine Milcent, Université Bretagne Sud
Angélique Frognier - Le Pennec, Université de Rennes
Joëlle Thépault, Université de Rennes

Permanent members

Nelly Barbot, Associate professor, Université de Rennes
Vincent Barreaud, Associate professor, Université de Rennes
Nicolas Béchet, Associate professor, Université Bretagne Sud
Giuseppe Bério, Professor, Université Bretagne Sud
Jonathan Chevelu, Associate professor, Université de Rennes
Arnaud Delhay, Associate professor, Université de Rennes
Sylvie Gibet, Professor, Université Bretagne Sud
Caroline Larboulette, Associate professor, Université Bretagne Sud
Damien Lolive, Professor, Université Bretagne Sud
Gildas Ménier, Associate professor, Université Bretagne Sud
Vincent Segonne, Associate professor, Université Bretagne Sud
Jeanne Villaneau, Associate professor (emeritus), Université Bretagne Sud

External collaborator

Elisabeth Delais-Roussarie, Senior researcher, CNRS/LLF
Farida Said, Associate professor, Université Bretagne Sud

Non-permanent members

Elie-Laurent Benaroya, Research Engineer, University of Rennes (since October 2024)
David Guennec, contractual assistant professor, Université de Rennes (since September 2022)
← Emilie Daniel, Engineer, University of Rennes (from December 2024 to September 2025)

- ← Clément Reverdy, post-doctoral researcher, SignToKid project, IRISA (from September 2023 to December 2025)
- → Mansour Tchénégnon, ATER, Université Bretagne Sud (from September 2024 to August 2026)
- → Hoan My Tran, ATER, Université de Rennes (from September 2025 to August 2026)
- ← Gaëlle Vidal, Engineer, Université de Rennes (from June 2024 to June 2025)
- ← Lily Wadoux, ATER, Université de Rennes (from September 2023 to August 2025)
- → Quentin Wendling, LRU, Université Bretagne Sud (from September 2025 to August 2026)

PhD students

- ← Danrun Cao, Université Bretagne Sud, CIFRE OctopusMind, defended in January 2025
  Hoan My TRAN, Université de Rennes, CD22+CDE-IA, since November 2022, 3rd year
  Ulysse Oliveri, University of Rennes, CIFRE Airbus, since March 2023, 3rd year
  Pauline Mas, University of Rennes, CIFRE Voxygen, since September 2023, 3nd year
  Quentin Lemesle, University of Rennes, CDE+DGA, since October 2023, 3nd year
  Rania Bennetayeb, Université Bretagne Sud, CIFRE Rennes Metropole, since October 2023, 3nd year
  Philippe Martin, University of Rennes, ANR EVA, since April 2024, 2nd year
- → Christophe Sauldubois, Solocal, since January 2025, 1st year
- → Francisco Morillas Espejo, 3rd year PhD, Erasmus student between UBS and Alicante University (Spain)
- → Geoffrey Anquetil, Université de Rennes, LTC+CDE, since November 2025, 1st year
- → Emilio Raimond, Université Bretagne Sud, Cluster SequoIA, since November 2025, 1st year

Master students

- ⇄ Barbara Abid Abid-Braga, University of Rennes

1.2 Evolution of the staff

The composition of the permanent staff remained unchanged during this year.

2 Overall objectives

Expressivity or expressiveness are terms which are often used in a number of domains. In biology, they relate to genetics and phenotypes, whereas in computer science, expressivity of programming languages refers to the ability to formalize a wide range of concepts. When it comes to human expressivity, we will consider the following reading: expressivity is the way a human being conveys emotion, style or intention. Considering this definition, the EXPRESSION team focuses on studying human language data conveyed by different media: gesture, speech and text. Such data exhibit an intrinsic complexity characterized by the intrication of multidimensional and sequential features. Furthermore, these features may not belong to the same representation levels - basically, some features may be symbolic (e.g., words, phonemes, etc.) whereas others are digital (e.g., positions, angles, sound samples) - and sequentiality may result from temporality (e.g., signals).

Within this complexity, human language data embed latent structural patterns on which meaning is constructed and from which expressiveness and communication arise. Apprehending this expressiveness, and more generally variability, in multidimensional time series, sequential data and linguistic structures is the main proposed agenda of EXPRESSION. This main purpose comes to study problems for representing and characterizing heterogeneity, variability and expressivity, especially for pattern identification and categorization.

The research project targets the exploration and (re)characterization of data processing models in three mediated contexts:

1. Expressive gesture analysis, synthesis and recognition,
2. Expressive speech analysis and synthesis,
3. Expression in text and language.

2.1 Main challenges addressed by the team

Four main challenges will be addressed by the team.

C1: The characterization of the expressiveness as defined above in human produced data (gesture, speech, text) is the first of our challenges. This characterization is challenging jointly the extraction, generation, or recognition processes. The aim is to develop models for manipulating or controlling expressiveness inside human or synthetic data utterances.

C2: Our second challenge aims at studying to what extent innovative methods, tools and results obtained for a given media or for a given pair of modality can be adapted and made cross-domain. More precisely, building comprehensive bridges between discrete/symbolic levels (meta data, semantic, syntactic, annotations) and mostly continuous levels (physical signals) evolving with time is greatly stimulating and nearly not explored in the different scientific communities.

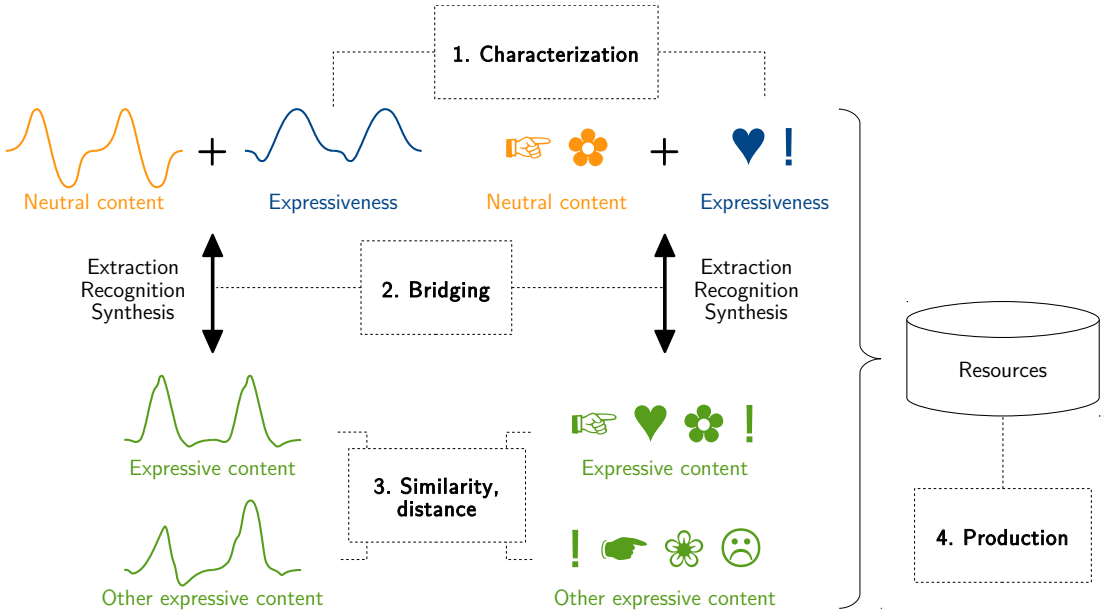


Figure 1: Overview of the main challenges considering both on continuous numerical (left) and discrete symbolic (right) data.

C3: The third challenge is to address the characterization and exploitation of data-driven embeddings[1] (metric or similarity space embeddings) in order to ease post-processing of data, in particular to reduce the algorithmic complexity and meet the real-time or big-data challenges. The characterization of similarity in such embeddings is a key issue as well as the indexing, retrieval, or extraction of sub-sets of data relevant to user's defined tasks and needs, in particular the characterization of expressiveness and variability.

C4: The fourth challenge is to contribute to the production of resources that are required, in particular to develop, train and evaluate machine learning (statistical or rule-based) models for human language data processing. These resources are mainly corpora (built from speech, text and gesture time series), dictionaries, and semantic structures such as ontologies.

All the addressed challenges are tackled through the development of models, methods, resources and software tools dedicated to represent and manage gesture, speech or textual data. Thus we consider a complete processing chain that includes the creation of resources (corpus, thesaurus, semantic network, ontology, etc.), the labeling, indexing and retrieval, analysis and characterization of phenomena via classification and extraction of patterns (mostly sequential).

These challenges also target multi-level aspects, from digital tokens to semantic patterns, taking into account the complexity, the heterogeneity, the multi-dimensionality, the volume, and the nature of our temporal or sequential data.

[1]Given two metric or similarity spaces (X, d) and (X', d'), a map $f : (X, d) \to (X', d')$ is called an embedding.

We are aiming at addressing these challenges in terms of development and exploitation of machine learning and pattern discovery methods for clustering, classification, interactive control, recognition, and production of content (speech signals, texts or gestures), based on different levels of representation (captured or collected data but also knowledge that is specific to the media or the considered application). Finally, both objective and subjective (perceptive) evaluations of these models are a key issue of the research directions taken by the EXPRESSION team.

2.2 Main research focus

Five thematic lines of research are identified to carry out this research.

RF1: Data acquisition – Gesture, speech or text data are characterized by high levels of heterogeneity and variability. Studying such media requires high quality data sets appropriate to a well defined and dedicated task. The data acquisition process is thus a crucial step since it will condition the outcomes of the team research, from the characterization of the studied phenomena, to the quality of the data driven models that will be extracted and to the assessment of the developed applications. The production of high quality and focused corpora is thus a main issue for our research communities. This research focus addresses mainly the fourth challenge;

RF2: Multi-level representations – We rely on multi-level representations (semantic, phonological, phonetic, signal processing) to organize and apprehend data. The heterogeneity of these representations (from metadata to raw data) prevents us from using standard modeling techniques that rely on homogeneous features. Building new multi-level representations is thus a main research direction. Such representations will provide efficient information access, support for database enrichment through bootstrapping and automatic annotation. This research focus contributes mainly to the second, third and fourth challenges;

RF3: Knowledge extraction – This research addresses data processing (indexing, filtering, retrieving, clustering, classification, recognition) through the development of distances or similarity measures, rule-based or pattern-based models, and machine learning methods. The developed methods will tackle symbolic data levels (semantic, lexical, etc.) or time series data levels (extraction of segmental units or patterns from dedicated databases). This research focus contributes mainly to the first and third challenges.

RF4: Generation – We are also interested in the automatic generation of high-quality content reproducing human behavior on two modalities (gesture and speech). In particular, to guarantee adequate expressiveness, the variability of the output has to be finely controlled. For gesture, statements and actions can be generated from structural models (composition of gestures in French sign language (LSF) from parameterized linguistic units). For speech, classical approaches are data-driven and rely either on speech segment extraction and combination, or on the use of statistical generation models. In both cases, the methods are based at the same time on data-driven approaches and on cognitive and machine learning

control processes (e.g., neuromimetic). This research focus contributes mainly to the first and fourth challenges since generation can be seen also as a bootstrapping method. As parallels can be possibly drawn between expressive speech and expressive movement synthesis, the focus also contributes to the second challenge;

RF5: Use cases and evaluation – The objective is to develop intuitive tools and in particular sketch-based interfaces to improve or facilitate data access (using different modes of indexing, access content, development of specific metrics, and graphical interfaces), and to integrate our aforementioned models into these tools. As such, this focus contributes to the first challenge and has a direct impact on the fourth challenge. Furthermore, whereas many encountered sub-problems are machine learning tasks that can be automatically evaluated, synthesizing human-like data requires final perceptive (*i.e.* human) evaluations. Such evaluations are costly and developing automatic methodologies to simulate them is a major challenge. In particular, one axis of research directly concerns the development of cross-disciplinary evaluation methodologies. This research focus contributes also to the second challenge;

3 Scientific achievements

3.1 New Results by Key Issues

In accordance with the Team Project, the main outcomes for 2025 are listed into the following key issues items defined above for the team:

Data acquisition, Knowledge extraction

Textual data augmentation using generative approaches - Impact on named entity recognition tasks [1] Industrial applications of Named Entity Recognition (NER) are usually confronted with small and imbalanced corpora. This could harm the performance of trained and finetuned recognition models, especially when they encounter unknown data. In this study, we develop three generation-based data enrichment approaches in order to increase the number of examples of underrepresented entities. We compare the impact of enriched corpora on NER models, using both non-contextual (fastText) and contextual (Bert-like) embedding models to provide discriminant features to a biLSTM-CRF used as an entity classifier. The approach is evaluated on a contract renewal detection task applied to a corpus of calls for tenders. The results show that the proposed data enrichment procedure effectively improves the NER model's effectiveness when applied on both known and unknown data.

Knowledge extraction

Triples-Driven ontology construction with LLMs for Urban Planning compliance [4] Ensuring compliance with urban planning regulations requires both semantic precision and fully interpretable decision processes. In this paper, we present a semi-automated methodology that combines the flexibility of large language models with the rigour of Semantic Web technologies to develop an urban planning ontology from

regulatory texts. First, the paper presents a systematic evaluation of eight state-of-the-art large language models on the WebNLG dataset for semantic triple extraction task, using few-shot and chain-of-thought prompting. It then discusses the engineering of a domain-adapted prompt. The resulting triples are partially validated through a two-step procedure that takes into account the topological properties of an underlying graph (corresponding to a raw version of a knowledge graph) and the assessment of Human domain experts.

Knowledge extraction

Ontology Semantic Disambiguation by LLM [11] Within the BPP project, a combination of statistics and word n-gram extraction enabled the creation of a bilingual (French/English) ontology in the field of e-recruitment. The produced dataset was of good quality, but it still contained errors. In this paper, we present an approach that explores the use of large language models (LLMs) to automate the validation and enrichment of ontologies and knowledge graphs. Starting with a naive prompt and using small language models (SLMs), we tested various approaches, including zero-shot, few-shot, chain-of-thought (CoT) reasoning, and self-consistency (SC) decoding. The preliminary results are encouraging, demonstrating the ability of LLMs to make complex distinctions and to evaluate the relationships derived from our ontology finely

Data acquisition, Knowledge extraction

Automatic characterization of French language registers: illustration on tweets [2] This article presents a methodological approach to automatically characterize language registers in French. The method of emerging sequential patterns is described and the obtained results demonstrated first on a corpus of tweets, then more broadly on registers in French. As both a premise and a result of the present approach, the definition presented in this paper for the notion of a language register highlights the notion of a linguistic norm.

Generation

Human Motion Reconstruction based on Deep Learning Coupled with 3D+t Laplacian Modeling [3] A 3D motion reconstruction and correction system has been proposed. The objective is to generate motion for computer animation purposes from 3D human pose estimation. Currently, most 3D pose estimation approaches fail to reconstruct motion that meets the specific requirements for 3D avatar animation. In particular, they often do not ensure the stability of the underlying skeleton or the temporal fluidity and coherence of the motion. We propose an additional process to address these limitations. Our system uses deep learning techniques in combination with Laplacian motion modeling, along with algorithms designed to enhance the temporal characteristics of the motion while preserving the integrity of the skeletal structure throughout the sequence. The approach is based on two deep neural networks. The first network utilizes a 3D+t graph representation of motion, combined with a discrete Laplacian operator, to improve the spatio-temporal deformation of the skeleton over time. The second network estimates fixed bone lengths within the skeletal structure, enabling the correction process to maintain skeletal consistency throughout the motion, while minimizing bone lengths errors in the reconstructed motion. Experiments conducted on

the outputs of state-of-the-art neural architectures demonstrate that our system significantly enhances both the spatial and temporal characteristics of the reconstructed motion. This improvement ensures that the corrected movements are suitable for use in data-driven animation applications. This work has been published in the journal The Visual Computer in July 2025.

Evaluation, Generation

Evaluation of Signing Avatars from a Linguistics Perspective Sign languages (SL) are the main means of communication for deaf population worldwide. In this sense, virtual avatars in sign language, also called signing avatars, present an effective way to deliver information to this part of the population in their native language. However, the complete generation of these 3D models is a complex task, mainly for the estimation of hand pose, due to occlusions and self-contacts between fingers, as well as blur caused by rapid movements during signing. In collaboration with University of Alicante, Spain, we proposed a comparison of the three main techniques used to create these avatars: traditional 3D animations, motion capture animation and deep learning-based synthesis. In particular, the study focuses on the linguistic components of signs, such as hand configuration and placement, for a subset of isolated signs. The three techniques were evaluated quantitatively, using an automatic hand configuration recognition model, and qualitatively through a perceptual study with deaf people. This work was submitted in May 2025 to the journal Neurocomputing.

Translation, Generation

Translating sentences from written French into LSF annotation [10] The automatic translation of written language into sign language can be approached as a two-stage process. In the first stage, written sentences are transcribed into gloss-based annotations that represent the structure of the target sign language; in the second, these annotations are used to generate 3D animations via a signing avatar. This paper focuses on the first stage: the automatic generation of gloss-based representations for French Sign Language (LSF) from written French. Beyond the general methodological framework, our main contributions are as follows: (i) the design of a parameterized glossed-based specification language that accurately captures the grammatical properties of LSF; and (ii) the implementation of a method for transcribing written French into gloss-based LSF annotations, using large language models trained on a limited amount of data. Our approach is evaluated using a bilingual corpus collected within the SignToKids project [27]. The results are promising and demonstrate the method's potential for scaling to larger datasets. This work has been published in the conference Intelligent Virtual Agents 2025.

Evaluation, Generation

Toward Accent Control in a Speech Synthesis System The use of embedding representations as inputs for Text-To-Speech (TTS) and Voice Conversion (VC) systems has become a standard approach in modern architectures, such as FastSpeech2. These embeddings – often capturing attributes like prosody, timbre, or accent – enable advanced speech generation models to seamlessly switch between different speaker identities or styles, even in zero-shot scenarios. As a result, systems like VITS, XTTS,

and NaturalSpeech 3 can deliver personalized, highly controllable, and expressive TTS and VC outputs. The effectiveness of this approach, however, depends critically on the quality of the attribute embeddings. For zero-shot TTS or VC to succeed in real-world applications, the underlying representations must address two fundamental challenges. First, embeddings must demonstrate robustness to acoustic variation, maintaining their representational integrity despite noise or adverse acoustic conditions. This is particularly important when embeddings are derived from real-world speech samples, where environmental noise or channel effects can compromise consistency. Second, embeddings must ensure clear disentanglement of attributes, isolating the intended characteristic from all other speech features. While earlier representations were often tailored to specific tasks, such as speaker recognition, recent research underscores the importance of explicit disentanglement for fine-grained control and high-fidelity synthesis. To date, developing embedding extractors that simultaneously achieve both robustness and attribute disentanglement remains a central challenge in speech generation research. As an initial step, we have established a set of metrics and evaluation protocols to assess speaker/accent disentanglement and the impact of noise on speaker and accent representations. This work has not been published yet.

Evaluation, Generation

Empathetic Conversational Agent The primary aim of this Master's thesis (Barbara Abid-Braga) was to investigate emotional speech synthesis through the development of a voice-based conversational agent designed to dynamically adapt its vocal expressivity in response to the interlocutor's recognized emotional state. The proposed system integrates an emotion analysis component, which extracts VAD (Valence, Arousal, Dominance) vectors and spoken word sequences from input speech, coupled with a synthesis component (based on FastSpeech) that generates the corresponding token sequence. A central control module enables real-time modification of the VAD vectors, thereby facilitating continuous exploration of the emotional representational space.

Multi-level representation, Knowledge extraction, Generation

Multi-level SSL Feature Gating for Audio Deepfake Detection [16] Recent advancements in generative AI, particularly in speech synthesis, have enabled the generation of highly natural-sounding synthetic speech that closely mimics human voices. While these innovations hold promise for applications like assistive technologies, they also pose significant risks, including misuse for fraudulent activities, identity theft, and security threats. Current research on spoofing detection countermeasures remains limited by generalization to unseen deepfake attacks and languages. To address this, we propose a gating mechanism extracting relevant feature from the speech foundation XLS-R model as a front-end feature extractor. For downstream back-end classifier, we employ Multi-kernel gated Convolution (MultiConv) to capture both local and global speech artifacts. Additionally, we introduce Centered Kernel Alignment (CKA) as a similarity metric to enforce diversity in learned features across different MultiConv layers. By integrating CKA with our gating mechanism, we hypothesize that each component helps improving the learning of distinct synthetic speech patterns. Experimental results demonstrate that our approach achieves state-of-the-art performance on

in-domain benchmarks while generalizing robustly to out-of-domain datasets, including multilingual speech samples. This underscores its potential as a versatile solution for detecting evolving speech deepfake threats.

Knowledge extraction, Generation

Leveraging SSL Speech Features and Mamba for Enhanced DeepFake Detection [15] Large-scale self-supervised learning models have proven highly effective in extracting robust features for detecting both genuine and spoofed speech. However, leveraging these features remains challenging, particularly in balancing in-domain specialization with out-of-domain generalization. In this work, we propose an effective approach for automatically selecting features using self-gated mechanism, and aggregation of speech representations from a pretrained foundation model to enhance deepfake detection. Our approach integrates a multi-kernel gated convolution module to improve feature learning and facilitate the fusion of features. Additionally, we employ Mamba to effectively capture both short and long-range discriminative patterns in speech. The proposed method achieves strong performance in audio deepfake detection, demonstrating improved generalization across diverse datasets. The source code will be made available on Github.

Knowledge extraction, Generation

KAN You Hear the Truth? Audio Deepfake Detection with Kolmogorov-Arnold Networks [14] Kolmogorov-Arnold Networks (KAN) have recently emerged as a promising alternative to traditional multilayer perceptrons, offering superior performance and greater interpretability. In this work, we explore the potential of KAN by demonstrating its ability to enhance audio deepfake detection and robustness. To further improvement, we employ multi-level token classification by leveraging speech representations of foundation model. Experimental results across multiple evaluation datasets demonstrate that our approach enhances both specialization and generalization. These findings provide potential insights into the integration of KAN, laying the way for future research in this domain.

Knowledge extraction, Multi-level representation

Audio Deepfake Source Tracing using Multi-Attribute Open-Set Identification and Verifications [5] Audio deepfake detection has advanced significantly, in particular, thanks to the ASVSpoof challenge. However, existing approaches primarily rely on binary classification, which does not provide information about the origin of manipulated audio. In this paper, we address the problem of source tracing and propose two protocols to evaluate model performance in an open-set setting:(1) a few-shot identification protocol, where K reference audios are provided, and (2) a verification protocol inspired by speaker verification. We classify either the entire generation system or its components, such as the acoustic model or vocoder. Our models are trained both on an internal dataset and on the MLAAD source tracing dataset. Evaluation is done on five public datasets: three ASVSpoof sets, MLAAD and Blizzard23. Results show promising discrimination of unseen class attributes. Finally, we emphasize the need for a standardized ontology for source tracing in audio deepfake detection.

Use cases, Evaluation

Enabling the replicability of speech synthesis perceptual evaluations [6] How speech synthesis is evaluated is nowadays questioned. Not only have conventional listening tests as a whole been proven a poor match for modern synthesis, but more fundamentally, important information (eg, the question asked to the listener) is frequently missing in the report of the outcome of the evaluation despite the impact on the interpretation of the test results. This can lead to uncertainty about the validity of these evaluations. To address this issue, we propose standardising the structure of any evaluation report. To facilitate this standardisation, our contribution is twofold: an open-source subjective evaluation platform; and a set of reporting guidelines. The platform is designed to enable the development of easily shareable evaluation recipes. The set of guidelines complements the platform to support researchers in reporting their evaluation choices and analysis in more detail while relying on the recipe to describe the actual evaluation process.

Generation, Evaluation

Paraphrase Generation Evaluation Powered by an LLM: A Semantic Metric, Not a Lexical One [7] Evaluating automatic paraphrase production systems is a difficult task as it involves, among other things, assessing the semantic proximity between two sentences. Usual measures are based on lexical distances, or at least on semantic embedding alignments. The rise of Large Language Models (LLM) has provided tools to model relationships within a text thanks to the attention mechanism. In this article, we introduce ParaPLUIE, a new measure based on a log likelihood ratio from an LLM, to assess the quality of a potential paraphrase. This measure is compared with usual measures on two known by the NLP community datasets prior to this study. Three new small datasets have been built to allow metrics to be compared in different scenario and to avoid data contamination bias. According to evaluations, the proposed measure is better for sorting pairs of sentences by semantic proximity. In particular, it is much more independent to lexical distance and provides an interpretable classification threshold between paraphrases and non-paraphrases.

Generation, Evaluation

SocialForge: simulating the social internet to provide realistic training against influence operations [9] Social media platforms have enabled large-scale influence campaigns, impacting democratic processes. To fight against these threats, continuous training is needed. A typical training session is based on a fictive scenario describing key elements which are instantiated into a dedicated platform. Such a platform simulates social networks, which host a huge amount of content aligned with the training scenario. However, directly using Large Language Models to create appropriate content result in low content diversity due to coarse-grained and high-level scenario constraints, which compromises the trainees' immersion. We address this issue with SocialForge, a system designed toenhance the diversity and realism of the generated content while ensuring its adherence to the original scenario. Specifically, SocialForge refines and augments the initial scenario constraints by generating detailed subnarratives, personas, and events. We assess diversity, realism, and adherence to the scenario through custom evaluation protocol. We also propose an automatic method to detect erroneous constraint generation, ensuring optimal alignment of the content with the sce-

nario. SocialForge has been used in real trainings and in several showcases, with great end-user satisfaction. We release an open-source dataset generated with SocialForge for the research community.

Use cases and evaluation

Assessing Collaborative Writing through NLP: A Case Study on Monomodal Text Co-construction [12] Application of NLP metrics to analyze linguistic patterns in synchronous collaborative versus individual writing. A corpus of 30 narratives from undergraduate students (10 collaborative via MeetingWords, 20 individual) was analyzed using measures of syntactic complexity, lexical diversity, and sophistication. Results show that collaborative texts exhibit stronger syntactic-lexical correlations and greater negotiated coherence, while individual texts display higher stylistic variability. The study validates automated linguistic metrics for educational writing assessment and supports their integration in feedback systems for digital learning environments.

Knowledge extraction

Fathers and Mothers through Children's Eyes: A Child-Centered Approach Using NLP and Qualitative Analysis [13] Application of computational linguistics methods to analyze children's semantic representations of parental roles. Based on a 46,600-word corpus from 184 interviews (children aged 6-11), we constructed contextual dictionaries and knowledge graphs encoding lexical and semantic relationships. Results reveal asymmetric overlap: all father-associated terms appear in mother-related discourse, but not vice versa, with gender- and age-dependent variations in role attribution patterns. The study validates hybrid computational-qualitative approaches for semantic knowledge extraction from naturalistic child language data.

Generation

Projet COSMOS : Transcriptions anonymisées d'interviews d'enfants sur la construction sémantique et les stéréotypes [17] Development and public release of the COSMOS corpus (46,600 words) for NLP research on children's language and social cognition. Funded by MSHB (Maison des Sciences de l'Homme en Bretagne), the corpus comprises anonymized transcriptions of open-ended interviews with 184 children (6-11 years) from 4 Brittany schools (2021-2022), eliciting spontaneous discourse on conceptual representations and social stereotypes. Available on Nakala under open access, the resource enables computational analysis of developmental language patterns, semantic constructions, and stereotype formation in child-generated naturalistic language, supporting research in developmental linguistics, educational NLP, and semantic knowledge extraction.

Summary of the contributions

3.2 Defended PhDs and HDRs

- Danrun Cao has defended her PhD the 30th January 2025 in the context of an industrial CIFRE contract with Octopus Mind, located in Nantes. Her work ad-

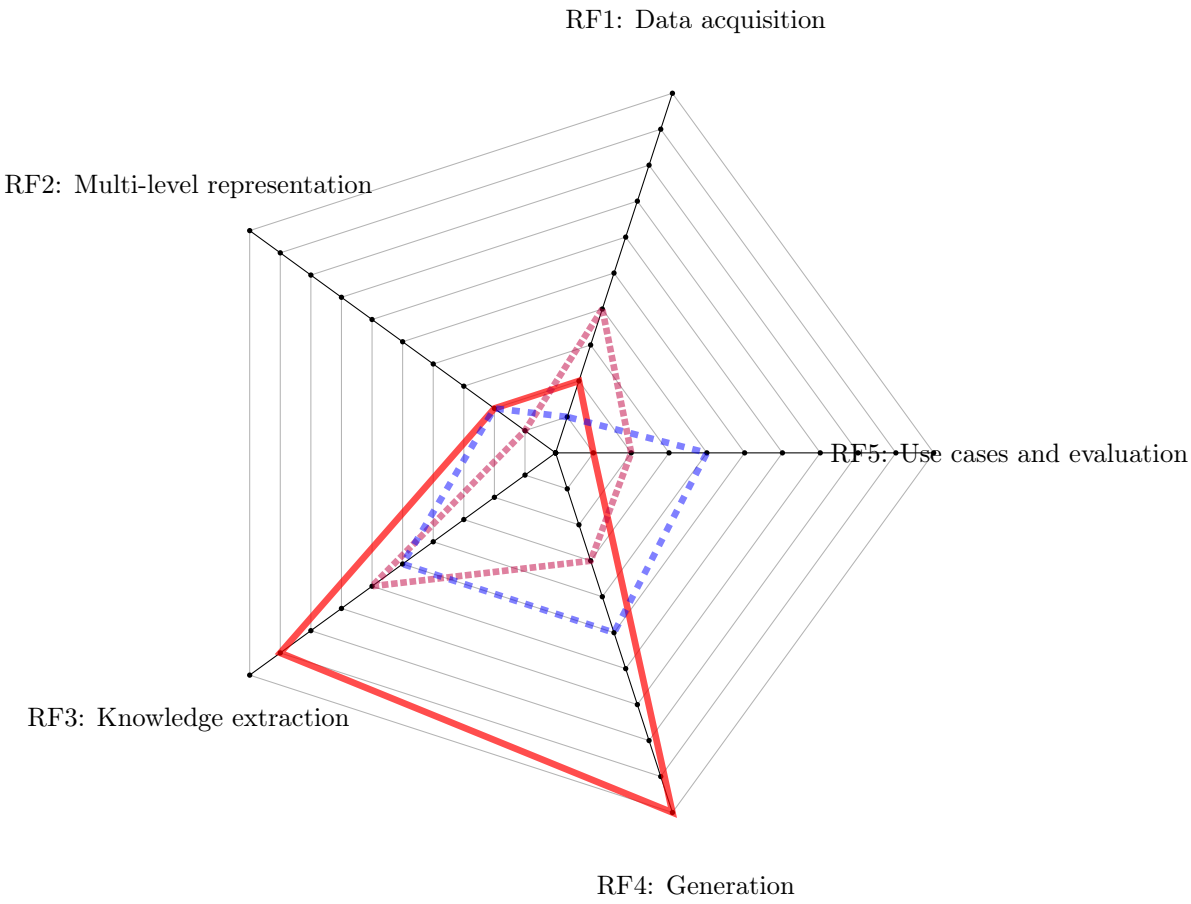


Figure 2: Contributions to each research focus of the team in 2025 (red, solid) compared to 2024 (purple, dotted) and 2023 (blue, dashed)

dresses information extraction (entities and relationships) in the context of business intelligence, while exploiting multilingual call for tenders databases. Danrun work has successfully contributed to establish the state of the art in Deep Learning approaches applied to Name Entity Recognition and semantic relation extraction for the French language.

3.3 On going PhDs

1. Hoan My Tran started his PhD in November 2022 on the detection of deep speech fakes in the context of voice conversion and speech synthesis. The aim of this work is to propose an automatic voice fraud detection system, based on the state of the art in the field, in particular in comparison with the work proposed as part of the ASVspoof challenge. He has published five papers in the deepfake detection domain in high level conferences and workshop at Interspeech. He is now preparing his PhD defense for the 4th of March 2026. This PhD is co-directed by Damien Lolive and Pierre-François Marteau, and co-supervised by Arnaud Delhay and Aghilas Sini from LIUM in Le Mans.

2. Ulysse Oliveri started his PhD in March 2023 under a CIFRE contract funded by Airbus. He works on controlled generation of text to fight disinformation. He is now in 3rd year and wirting his PhD mansucript for a defense planned before SUmmer 2026. This thesis is directed by Damien Lolive and Bruno Grilhères (Airbus) and co-supervised by Arnaud Delhay, Guillaume Gadek (Airbus) and Benjamin Costé (Airbus).

3. Pauline Mas started her PhD in September 2023 under a CIFRE contract funded by Voxygen. She works on multilingual modulation of prosodic elements in Speech Synthesis. This PhD is directed by Damien Lolive and Olivier Rosec (Voxygen), and co-supervised by Jonathan Chevelu and Marion Ouédraogo (Voxygen).

4. Quentin Lemesle started his PhD in October 2023 on the constraint paraphrase generation task in a frugal approach. This PhD is directed by Damien Lolive, co-supervised by Jonathan Chevelu and Arnaud Delhay. This PhD is half funded by the DGA AID.

5. Philippe Martin started his PhD in April 2024 on fine control of voice attributes in high quality Speech Synthesis. His PhD is part of the ANR project "EVA" (Explicit Voice Attributes) and is directed by Vincent Barreaud and Damien Lolive. He is co-supervised by Nelly Barbot and David Guennec.

6. Rania Bennetayeb started her PhD in October 2023 under a CIFRE contract funded by Rennes Metropole, in collaboration with B<>com. She works on "Semi-automatic construction of an ontology from textual resources related to urbanism". This thesis is directed by Giuseppe Berio and supervised by Nicolas Bechet and Majd SALAH (B<>COM, until october 2024). The main objective is to check that building permits comply with the rules in force in Rennes Métropole. The first year's work led to preliminary results submitted to GOLE 25 workshop Strasbourg.

7. Goeffrey Anquetil started his PhD in November 2025. The subject of the thesis is "Textual Steganography by Paraphrasing". It aims at controlling text generation with the constraints of preserving the semantics of an original sentence and inserting a secret into the generated text. Geoffrey is supervised by Jonathan Chevelu.

8. Christophe Sauldubois started his PhD in January 2025, under a CIFRE constract with Solocal. The subject is "Acculturation d'un Grand Moèle de Langage Ã la culture d'une entreprise dans le domaine des moteurs de recherche". Christophe is directed by Damien Lolive and co-supervised by Vincent Segonne and Nicolas Bechet.

9. Francisco Morillas Espejo, 3rd year PhD, Erasmus student between UBS and Alicante University (Spain), supervised by Sylvie Saget.

10. Emilio Raimond started his PhD on the 1st of November 2025 under the supervision of Damien Lolive and Vincent Segonne. The subject of his PhD funded by the SequoIA cluster is "Multimodal Interaction and Representation Analysis for Greater Explainability".

4 Software development

Text-To-Speech system In the frame of several technology transfer projects, developments have been done in 2019 on many pieces of software involved in the team's text-to-speech system to make it usable in industrial environments. This has mainly consisted in shifting some tools from script languages (Python, Perl, shell) to C++, and setting up web services on a production server, compatibility for Android and AMR7 architectures. This has been mainly achieved in the frame of the SPAM project (maturation project funded by the transfer technology service of University of Rennes 1). Further developments have been made in the frame of different projects such as NADINE or KALYGO-DYS.

Visual Quantum Simulator [Gildas Ménier] Most of the human behaviors involve uncertainty and fuzzy inner decisions in a way or another : Expression can be seen as a individual by-product as the top level visible artifacts of some unknown inner process. Markov models, or statistical process can be used to mimics the observable results of observable behaviors. Quantum State evolution shares also many similar features with the obfuscated or hidden way of thinking and communicating.

Not only does this (relatively) new paradigm bring some ideas related to human decision's process, it also may be a key progress for Machine Learning - Quantum Machine Learning or QML -. Some intensive computation involved in ML may be sped-up using Quantum schemes.

We are investing some efforts in the study of Quantum Computing both as a computing potential asset and source of ideas for human inner process simulation.

A Scala DSL (domain specific) language has been developed to manage Quantum Algorithm Evaluations *(https://github.com/gmenier/VisualQuantumSimulator/wiki)*

The software has been registered by *APP* (Agence pour la Protection des Programmes) under the number Inter Deposit Digital Number IDDN.FR.001.300006.000.S.C.2021.000.10000 (06.56.11046).

This simulator is designed to allow a graphical view of the inner processing involved in Quantum computing, thus helping grasping its inner working.

It is also designed as a starting backbone for experimentation and is actually used as a support for education.

Time Elastic Neural Networks (teNN) A CPU implementation of teNN architecture written in ANSI C, along with its Python wrapper, is available under the GNU GENERAL PUBLIC LICENSE at `https://github.com/pfmarteau/time-elastic-Neural-Networks`. This implementation requires that multivariate time series have a fixed length.

5 Contracts and collaborations

5.1 National Initiatives

5.1.1 Détection de Voix de Synthèse - DVS

Participants: Damien Lolive, Vincent Barreaud, Arnaud Delhay, David Guennec, Emilie Daniel, Elie-Laurent Benaroya.

The DVS project is a part of the RAPID *Régime d'Appui à l'Innovation Duale* framework proposed by the AID *Agence Innovation Défense*. This framework provides support to innovative projects related to national security and lead with Whispeak. The aim of the DVS project is to design a strategy to detect audio deep fakes. Expression team provides a set of state of the art systems (synthesis, voice conversion and voice cloning), trained or fined tuned with 12 languages with a hundred of speakers each. This project begun in October 2023 and is expected to end in October 2025. It has been extended to August 2026. In the frame of this project, IRISA together with Whispeak won the DGA fake speech detection challenge in 2024, and published an article in Interspeech 2025 proceedings about source tracing for speech deepfake detection[5].

5.1.2 Explicit Voice Attributes ANR Project

Participants: Damien Lolive, Vincent Barreaud, Philippe Martin.

The objective of this project is to crack the codes of human voices via learning explicit and structured representations of voice attributes. The realization of this main objective will have a strong scientific and technological impact, in at least two fields of application: firstly, in speech analysis, it will unlock the understanding of the complex entanglement of the characteristics of a human voice; secondly, in voice generation, it will open the way to a wide range of applications to create a voice with the desired attributes, allowing the design of so-called voice persona.

The project will leverage a substantial skill set by the partners, which include Orange, a leading telecommunication provider with strong research skills on speech processing, IRCAM, a research lab with a strong expertise in neural speech synthesis and voice conversion and three academic labs: LIA with a strong expertise in speaker analysis and anonymization, LPP, an internationally recognized laboratory, which holds a LABEX (Empirical Fundations of Linguistics), and provides the strong skills needed in phonetics, and IRISA (Expression Team) with expertise in expressive text-to-speech.

The project started in October 2023 and will end in February 2028. The project is registered under the ANR Contract Number ANR-23-CE23-0018.

5.1.3 Ethos - Automatic annotation of Horse Sound

Participants: Philippe Martin, Arnaud Delhay, Vincent Barreaud.

In June 2023, the team CIRCÉ[2] from EthoS laboratory[3] and the team EXPRESSION began collaborating on the detection and classification of sound events emitted by horses. Horses are equipped with microphones to pick up various sound events linked to their behavior (neighing, snorting, etc.) in different environments (stable stalls, outdoors). In this context, classification work enables ethology researchers to identify events in the sound continuum that may occur, and then to observe the scenes linked to these events, thus studying the well-being of the subject observed as a function of what happens in these situations.

The team CIRCÉ has recorded about 30 000 hours of sound rush from 65 horses in diverse location as meadow or stable. Each horse was recorded for 2 continuous weeks. There is a wide range of sounds with their particularities and also rarer events which make this task a complex one.

The main objective of this collaboration will be to research methods for adapting to different types of massive acoustic content, based on recordings made continuously, 24 hours a day, 7 days a week, on animals equipped with on-board loggers fitted with sensors (audio recorder and accelerometer). The aim is to develop versatile classification methods using unsupervised or weakly supervised classification methodologies, and to evaluate the ability to transfer knowledge from one model to another on ethological data.

5.1.4 SignToKids ANR Project

Participants: Sylvie Gibet, Clément Reverdy, Damien Lolive, Pierre-Francois Marteau, Jeanne Villaneau, Farida Said.

The SignToKids project aims to improve the inclusion of deaf children in education by focusing on digital accessibility. More specifically, it focuses on creating digital and educational tools to facilitate the coordinated learning of LSF and written French for deaf children. By working on their sign language skills, deaf children will have a

[2]Communication Intra-/Inter espèces, Relation, Cognition, Émotions
[3]UMR 6552 - Ethologie animale et humaine

more robust mother tongue, which will facilitate the transition to written French. The resulting digital assistance tools will serve as a basis for testing the skills acquired at different levels of the child's learning. This project contributes to the advancement of research on the automatic translation of French texts into their aligned glossed LSF, based on LSF grammatical rules. This allows us to increase the amount of data available in sentence pairs (French, written LSF), and ultimately enables us to generate new sentences in glossed LSF.

This project is coordinated by Sylvie Gibet. It started in January 2023 and is extended until august 2026.

Keywords: French Sign Language, Text-to-LSF, pedagogical tools

5.1.5 CONSIODÉPA - MSHB Project

Participants: Farida Saïd, Jeanne Villaneau.

The CONSIODÉPA project, supported by the MSHB (Maison des Sciences de l'Homme en Bretagne), runs from September 1, 2024, to August 31, 2026, and builds on interviews with detainees collected during a preliminary phase in a detention center. It is part of the research axis "Democracy, Transformations, and Experimentations" of the MSHB. Its objectives are to construct a corpus based on detainees' testimonies, reflect on the ethical, deontological, and legal procedures required for its development, and analyze these data to better understand prison life, the perception of sentences, and the experience of incarceration. This corpus aims to shed light on rarely publicized experiences and contribute to public debate on sensitive issues related to the prison environment, while ensuring rigorous scientific exploitation and dissemination in a form adapted for the general public.

5.1.6 APIPreSui ANR Project

Participants: Nicolas Béchet.

The APIPreSui project (Participatory and Interdisciplinary Analysis of a Suicide Prevention Chat) is an interdisciplinary participatory research of a digital suicide prevention chat system. The analysis is co-constructed with the prevention association, its trainers, psychologists and volunteers on the one hand, and researchers in language sciences (sociolinguistics - discourse analysis - lexicometry - NLP), computer science and social psychology on the other. This project will end in February 2027.

5.1.7 Simult'Art PEPR ICCARE

Participants: Caroline Larboulette.

The *Simult'Art* project explores new forms of artistic expression through immersive technologies (`https://pepr-iccare.fr/simulart/`). The objective is to create

innovative algorithms to control interactive systems in which the expressivity of human movement drives real-time multi-sensory simulations (visual, sound, haptic). Adding an immersive dimension to classical art will offer the public a new way of interacting with artworks - now animated, expressive, endowed with their own style and emotions, and therefore *alive*. In the field of performing arts, the use of sensors coupled with simulation algorithms will allow artists to create differently, using new tools that become a true extension of their body, expanding possibilities while guaranteeing full control of their expression.

This work benefits from state funding managed by the National Research Agency under the France 2030 program, reference ANR-23-PEIC-0001. Duration 2 years (September 2025 - August 2027).

5.2 National Collaborations

- We are collaborating actively with Marie Tahon, full professor at LIUM in Le Mans, France. We shared common interests on emotions annotation, and generation in the context of speech synthesis.
- We are collaborating actively with and Aghilas Sini, associate professor at LIUM in Le Mans, France. We share the supervision of Hoan My Tran's PhD about speech deepfake detection.
- In the frame of the TREMoLo and TextToKids projects, the team works with members of the MoDyCo lab, especially Delphine Battistelli, full professor at University of Paris-Nanterre. 2 MSc interns have been co-supervised (Alexis Blandin, Aline Étienne), while Jade Mekki defended her PhD in September 2022. We are currently in the process of submitting a new ANR project with Delphine and Orange.
- Caroline Larboulette collaborates with Laura Pouppeville (`https://laurapouppeville.fr/`), a visual artist who works at Pantin as part of the *Collectif W*, on the project Simult'Art, that has been awarded a grant from the PEPR ICCARE in 2025. The aim of the project is to collect and analyse data, and use this data to produce an art piece composed of physical sculptures and their digital twins in a VR environment. She also collaborates with Alexandre Meyer, MCF at Université de Lyon, on the analysis of this motion data (*corpus MiS*).
- A collaboration started between Damien Lolive and Nicholas Evans (Eurecom) thanks to the RAPID DVS project. The subject of this collaboration is on Source Tracing for deep fake detection.

5.3 International Collaborations

- Since October 2021, Caroline Larboulette collaborates with Ravi Dattatreya, funder and chairman of the Margosa Group, New York, with various master students on Art and Science projects (string art in 2022, celtic knots in 2023 and 2025). Since septembre 2024, they collaborate on the Kolam project that aims to create

a unified/general algorithm capable of drawing Indian Kolams and Celtic Knots using the same formalism.

- Hoan My Tran, Damien Lolive and Arnaud Delhay also collaborated with Ajinkya Kulkarni (Idiap Institute, Switzerland) to build a new deep fake detection system. A publication has been accepted to ASVSpoof 2024 workshop and another one to Interspeech 2025 as an outcome of this collaboration. Further work has been done with the creation of a leaderboard for the valuation of fake speech detection systems on HuggingFace and the publication of a journal article to IEEE Open Journal of Signal Processing.

6 Dissemination

6.1 Involvement in the Scientific Community

- Damien Lolive is head of the Signal, Image, Language Department (formerly Media and Interaction Department) of IRISA lab from October 2021. He has been part of board of directors of the French speech communication association (AFCP) until Dec. 2024. He has also been co-responsible for the working group on intermodality and multi-modality of the GDR TAL (special interest group in NLP). He serves as a reviewer for the IEEE Transactions on Speech and Language processing, for the IEEE Access journal, for the ACL RR community, for the *Traitement Automatique des Langues* journal, for the International conference of the International Speech Communication Association (Interspeech), the International Conference on Audio, Speech and Signal Processing (ICASSP), the international conferences LREC and Speech Prosody, as well as for the *Journées d'Études sur la Parole* conference. He regularly serves as an expert for the french research agency (ANR) and also for the Ministry of Research to expertise CIR applications in the NLP domain.

- Giuseppe Berio served as reviewer for national and international conferences. He also acts as steering committee member of the International Conference on Advances in Semantic Processing (SEMAPRO).

- Jonathan Chevelu is an elected member of the 'Conseil scientifique' (Research committee) of École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT). He has served as a reviewer for The 31st International Conference on Computational Linguistics (COLING 2025).

- Arnaud Delhay is an elected member of the 'Commission Recherche' (Research committee) of the IUT of Lannion. He has served as a reviewer for the International conference of the International Speech Communication Association (Interspeech 2025, for International Conference on Artificial Intelligence Applications and Innovations), and for ACM Multimedia 2025.

- Caroline Larboulette is a member of various program committees for international conferences, a member of the editorial review board of the international journal of computer graphics and creative interfaces (IJCICG) and serves as a reviewer for

various journals (Computer & Graphics, TVCG, CAVW, Journal on Multimodal User Interfaces). In 2021, she joined the Editorial Board of Frontiers in Computer Science as an Associate Editor, to participate to the launch of a new section on Computer Graphics and Visualization in 2022. Since november 2019, she is co-director of the GTAS, the "Groupe de Travail Animation et Simulation" of the GdR IG-RV (Informatique Géométrique et Graphique, Réalité Virtuelle et Visualisation) of the CNRS INS2i and also member of the direction committee of the GdR.

- Nelly Barbot is a member of the 'Conseil scientifique' (Research committee) of École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT). She has served as a reviewer for the International conference of the International Speech Communication Association (Interspeech).

- Nicolas Béchet is a member of program committees for international conferences International Conference on Natural Language & Information Systems (NLDB) and Language Resources and Evaluation Conference (LREC). He also has served as a reviewer for the Intelligent Decision Technologies Journal (IDT), the International Conference on Computational Linguistics (COLING) and the International Journal of Machine Learning and Cybernetics.

- David Guennec served as a reviewer for the International conference of the International Speech Communication Association (Interspeech 2025) and the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2026).

- Farida Saïd served as a reviewer for an international journal (IEEE Transactions on Neural Networks and Learning Systems, Frontiers in Psychology) and international conferences (IEEE-EMBS International Conference on Biomedical and Health Informatics 2025, International Conference on Interactive Collaborative Learning 2025, Society for Research in Child Development Biennial Meeting 2025). Co-supervision of Abbas Ramadan's PhD thesis "Enhancing the performance of a smart home through a digital twin approach" (2022-2025), Lab-STICC (équipe SHAKER), Université de Bretagne Sud. Co-directors: Nathalie Julien, Florent Frizon de Lamotte. Successfully defended in June 2025.

- Sylvie Gibet is a member of various program committees for international conferences: IEEE International Conference on Acoustics, Speech, and Signal Processing, LREC-COLING, Motion in Game, Computer Animation and Social Agents, Motion Computing. She serves as a reviewer for various journals (Computer & Graphics, Trans. on Visualization and Computer Graphics, Computer Animation and Virtual Worlds, The Visual Computer, Springer Nature, Universal Access in the Information Society.

- Vincent Barreaud served as a reviewer for the International conference of the International Speech Communication Association (Interspeech).

6.2 Teaching

- Giuseppe Berio teaches courses on design and implementation of decision information systems at IUT Vannes and faculty of sciences (master level), Université Bretagne Sud. A project management course is also taught at IUT Vannes.

- Nelly Barbot teaches the following mathematics courses at École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT): algebra and analysis basis, mathematical logic in Licence level, probability and statistics in Master level. She is responsible of the student admission processes at ENSSAT and co-responsible (50%) for the creation of a new university preparatory cycle (level L1 and L2) in collaboration with the IUT of Lannion.

- Vincent Barreaud teaches the following computer science courses at École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT): Web Programming, Web Services and Distributed Algorithms in Licence level. He has been director of studies at ENSSAT until mid 2021 and is now responsible for the master 1 level of computer science.

- Nicolas Béchet teaches various computer sciences courses at the Data Science department of IUT Vannes. He is the director of studies at IUT in the Data Science department.

- Arnaud Delhay teaches databases and web programming (server- and client-side) in Licence levels at IUT of Lannion, calculability and computational complexity of problems in Master level at École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT).

- Jonathan Chevelu teaches the following computer science courses at École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT): cybersecurity in Licence and Master level, operative systems in Licence level, natural language processing and machine learning in Master level. Jonathan Chevelu is currently the Head of the Computer Science department at ENSSAT and also responsible for the license 3 level of computer science.

- David Guennec teaches computer science courses at ENSSAT : Secure C Programming and Object Oriented Programming at license level at ENSSAT. He leads a project for a new Master degree at ENSSAT with a focus on cybersecurity.

- Caroline Larboulette teaches graphical user interfaces to undergraduate students as well as introduction to computer graphics (I2G) and simulation and interactive applications (SAI) at the master level (Master of Computer Science, AIDN (Interactive Applications and Data)) at the faculty of science of the Université Bretagne Sud. She co-manages both Introduction to Research teaching units for M1 students and supervises 5 M1 students on research projects. She also teaches a character animation lecture at PolyTech' Angers. She has been Head of the MIS (Mathematics - Computer Science - Statistics) department at Université Bretagne Sud from November 2022 to August 2025 (44 people). She was also responsible of both Computer Science degrees, bachelor and master until August 2025. She

obtained a CRCT of one year from Septembre 2025 to August 2026 and thus suspended Lectures and Administrative work for this period of time.

- Farida Saïd has been Head of the Mechatronics Department at ENSIBS (École Nationale d'Ingénieurs de Bretagne Sud, Université de Bretagne Sud) since January 2022. She teaches the following courses at UBS: Numerical Methods for Engineers, Data Science, and Machine Learning (ENSIBS engineering curriculum); Statistical Foundations for Cybersecurity (Master Cyberus program); and Biostatistics (Master in Biotechnologies, M1 and M2 levels).

- Sylvie Gibet teaches the following Computer Science courses at the faculty of sciences, Université Bretagne Sud: An introduction of Digital Signal Processing and Machine Learning (1st year master level, AIDN), and Movement and Artifical Intelligence (2nd year master level, AIDN). She was a member of the Faculty of Science Council and a member of the CFVU at UBS until August 2025. She was a member of the National University Council in computer science (CNU) until September 2025.

- Quentin Lemesle taught Database, Advanced Database, Data Mining and tutored projects in licence level at IUT of Lannion. He now teaches Algorithmic, informatic development basics and Web development in licence level, as well as Machine Learning in master level at École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT).

- Damien Lolive taught the following computer science courses at École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT) until mid-2024: object-oriented programming in Licence level, compilers architecture and formal languages theory in Master level, speech and language processing in Master level, and pattern recognition in Master level. Since September 2024, he is full professor at the IUT of Université Bretagne Sud in Vannes. He now teaches NLP at the master level, and artificial intelligence, multimedia programming and databases at the licence level.

- Pierre-François Marteau teaches programming languages, logics, introduction to cryptography, information retrieval, machine learning and intrusion detection courses in computer sciences License and Master levels, mostly at École Nationale Supérieure de Bretagne Sud (ENSIBS). He is responsible of the bachelor level for the computer science program at ENSIBS.

- Philippe Martin teaches the following computer science courses at École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT): Computer algorithm course and object-oriented programming course in license level and Artificial Intelligence course in master level.

- Pauline Mas teaches informatic development basics in license level and speech and language processing in Master level at École Nationale Supérieure des Sciences Appliquées et de Technologie (ENSSAT).

- Gildas Ménier teaches various computer sciences courses at the faculty of sciences, Université de Bretagne Sud.

- Hoan My Tran has taught Database introduction at IUT of Lannion, Java programming, Back-end Web Programming, Web services and Algorithmic at ENSSAT.
- Lily Wadoux teaches algorithmics, object-oriented programming and databases (licence level) at IUT of Lannion.

6.3 Conferences, workshops, invitations

6.4 Meetings, other dissemination

- David Guennec participated as a speaker to the the event called "A pint of Science" on the 19th of May 2025 in Lannion. The subject the presentation was "L'IA va-t-elle faire de nous des chômeurs ?" (*Will AI make us all unemployed?*). The subject of the presentation was and served to contextualize the current developpment of AI. On the 18th of September, he was a speaker at La cité des métiers des Côtes d'Armor (Ploufragan), presenting "L'IA va-t-elle nous prendre nos emplois ?". Finally, he and Quentin Lemesle presented "Comment sécuriser (un peu) mon LLM ?" (*How to secure my LLM (a bit) ?*) at the second edition of the Hack'In Tregor.
- Quentin Lemesle presented with David Guennec "Comment sécuriser (un peu) mon LLM ?" (*How to secure my LLM (a bit) ?*) at the second edition of the Hack'In Tregor.
- Quentin Lemesle, Pauline Mas and Philippe Martin are members of the board of the Lannion PhD student association since November 2024. Quentin Lemesle has been elected as the new co-president of the association, whereas Pauline Mas has taken the charge of treasurer and Philippe Martin that of secretary. This association aims to gather and help PhD student from Lannion since 2022. It organizes networking opportunities, cultural and social events and handle the communication with various actors of the scientific research community and industrials.

6.5 Graduate student and student internship

- Étienne Cauty, a Master 2 student in computer science at ENSSAT, worked on exploring textual steganography using paraphrase generation methods and LLMs. The internship lasted 6-months, 2 days per weeks. He was supervised by Jonathan Chevelu.
- Guillaume Collet, a Master 1 student in computer science at ENIB (École Nationale d'Ingénieur de Brest). He worked on the feasibility of setting up a Kubernetes cluster to deploy and monitor services and computing tasks on the team's servers.
- Maxime Perrot, a BUT 3 student at IUT de Lannion, worked on the improvement of the team' evaluation software Flexeval during a 4 months internship. He started form a preexisting script for automatically analyzing the results of Flexeval subjective tests. He improved the process and created a results analysis dashboard

inside Flexeval in order to further automatize the process. He was supervised by David Guennec.

- Louis BARRIAC, Simon LE CHANU, Dewi MONBOUSSIN, Jules NICOLAS, four BUT 2 students at IUT de Vannes, worked on improving the process of creating a Flexeval test by unifying and simplifying the input format and creating a new tool that creates a Flexeval test using a graphical interface. They were supervised by David Guennec.

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