

# Valentin Pelloin

RESEARCHER IN SPEECH AND NATURAL LANGUAGE PROCESSING · ARTIFICIAL INTELLIGENCE

Paris, France

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## Summary

I'm a researcher at Institut National de l'Audiovisuel (INA) working on speech issues related to audiovisual archives. My current main research interests are Automatic Speech Recognition (ASR), speech and speaker recognition and end-to-end information extraction.

## Work Experience

### INA – Institut National de l'Audiovisuel

SPEECH RESEARCHER ON AUDIOVISUAL ARCHIVES

Bry-sur-Marne, France

2023 - present

Research on self-supervised models, automatic speech recognition, speaker and speech recognition, gender bias in archives.

### LIUM – Laboratoire d'Informatique de l'Université du Mans

PHD STUDENT

Le Mans, France

2020 - 2023

Research, teaching and scientific popularisation.

## Education

### PhD in Computer Science

THESIS TITLE: "Spoken language understanding in human-computer dialogue systems in the era of pretrained models"

LIUM, Le Mans Université, France

2020 - 2024

End-to-end and cascaded Spoken Language Understanding (SLU) systems within the AISSPER project, funded by ANR (Agence Nationale de la Recherche) grant ANR-19-CE23-0004. Under the supervision of Sylvain Meignier, Nathalie Camelin and Antoine Laurent.

Different kind of architectures were proposed: a state-of-the-art LSTM encoder-decoder model built to perform both the ASR and semantic information extraction from the speech. Furthermore, a novel hybrid end-to-end and cascaded approach was evaluated. Other architectures were constructed and evaluated, including architectures based on SSL pretrained models such as wav2vec2, BERT, LLMs (Llama, GPT), as well as multimodal and multilingual models.

### MSc in Computer Science (with highest honours)

ARTIFICIAL INTELLIGENCE AND NATURAL LANGUAGE PROCESSING

Le Mans Université, France

2018 - 2020

Two internships at LIUM (Laboratoire d'Informatique de l'Université du Mans):

- 2020 (6 months) – Implementation of a state-of-the-art end-to-end Spoken Language Understanding system.
- 2019 (3 months) – Conception of an automatic textual document classification prototype for SNCF (French Railway Operator). Building of a word embedding library: svd2vec.

### BSc in Computer Science (with highest honours)

ACOUSTIC AND COMPUTER SCIENCE MODULES

Le Mans Université, France

2015 - 2018

### STI2D baccalaureate (with highest honours)

Lycée Colbert de Torcy, France

2012 - 2015

## Publications

- [1] David Doukhan, Lena Dodson, Manon Conan, **Valentin Pelloin**, Aurélien Clamouse, Mélina Lepape, Géraldine Van Hille, Cécile Méadel, and Marlène Coulomb-Gully. **Gender Representation in TV and Radio: Automatic Information Extraction methods versus Manual Analyses**. In: *Proc. Interspeech 2024*. Aug. 2024, pp. 3060–3064. DOI: 10.21437/Interspeech.2024-1921.
- [2] **Valentin Pelloin**. **La compréhension de la parole dans les systèmes de dialogues humain-machine à l'heure des modèles pré-entraînés**. PhD thesis. Le Mans Université, Jan. 2024. URL: <https://theses.hal.science/tel-04446162>.
- [3] **Valentin Pelloin**, Lena Dodson, Émile Chapuis, Nicolas Hervé, and David Doukhan. **Automatic Classification of News Subjects in Broadcast News: Application to a Gender Bias Representation Analysis**. In: *Proc. Interspeech 2024*. Aug. 2024, pp. 3055–3059. DOI: 10.21437/Interspeech.2024-1854.

- [4] Gaëlle Laperrière, **Valentin Pelloin**, Mickaël Rouvier, Themis Stafylakis, and Yannick Estève. **On the Use of Semantically-Aligned Speech Representations for Spoken Language Understanding**. In: *2022 IEEE Spoken Language Technology Workshop (SLT)*. 2023, pp. 361–368. doi: 10.1109/SLT54892.2023.10023013.
- [5] Nicolas Hervé, **Valentin Pelloin**, Benoit Favre, Franck Dary, Antoine Laurent, Sylvain Meignier, and Laurent Besacier. **Using ASR-Generated Text for Spoken Language Modeling**. In: *Proceedings of BigScience Episode #5 – Workshop on Challenges & Perspectives in Creating Large Language Models*. virtual+Dublin: Association for Computational Linguistics, May 2022, pp. 17–25. doi: 10.18653/v1/2022.bigscience-1.2.
- [6] Gaëlle Laperrière, **Valentin Pelloin**, Antoine Caubrière, Salima Mdhaffar, Nathalie Camelin, Sahar Ghannay, Bassam Jabaian, and Yannick Estève. **Le benchmark MEDIA revisité : données, outils et évaluation dans un contexte d'apprentissage profond**. French. In: *JEP 2022*. Noirmoutier, France, June 2022, pp. 481–490. doi: 10.21437/JEP.2022-51.
- [7] Gaëlle Laperrière, **Valentin Pelloin**, Antoine Caubrière, Salima Mdhaffar, Sahar Ghannay, Bassam Jabaian, and Yannick Estève. **The Spoken Language Understanding MEDIA Benchmark Dataset in the Era of Deep Learning: data updates, training and evaluation tools**. In: *LREC 2022*. Marseille, France: European Language Resources Association, June 2022, pp. 1595–1602.
- [8] Salima Mdhaffar, **Valentin Pelloin**, Antoine Caubrière, Gaëlle Laperrière, Sahar Ghannay, Bassam Jabaian, Nathalie Camelin, and Yannick Estève. **Impact Analysis of the Use of Speech and Language Models Pretrained by Self-Supervision for Spoken Language Understanding**. In: *LREC 2022*. Marseille, France: European Language Resources Association, June 2022, pp. 2949–2956.
- [9] **Valentin Pelloin**, Nathalie Camelin, Antoine Laurent, Renato De Mori, and Sylvain Meignier. **Architectures neuronales bout-en-bout pour la compréhension de la parole**. French. In: *JEP 2022*. Noirmoutier, France, June 2022, pp. 823–832. doi: 10.21437/JEP.2022-87.
- [10] **Valentin Pelloin**, Franck Dary, Nicolas Hervé, Benoit Favre, Nathalie Camelin, Antoine Laurent, and Laurent Besacier. **ASR-Generated Text for Language Model Pre-training Applied to Speech Tasks**. In: *Proc. Interspeech 2022*. 2022, pp. 3453–3457. doi: 10.21437/Interspeech.2022-352.
- [11] **Valentin Pelloin**, Nathalie Camelin, Antoine Laurent, Renato De Mori, Antoine Caubrière, Yannick Estève, and Sylvain Meignier. **End2End Acoustic to Semantic Transduction**. In: *ICASSP 2021 - 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. 2021, pp. 7448–7452. doi: 10.1109/icassp39728.2021.9413581.
- [12] **Valentin Pelloin** and Thibault Prouteau. **Apprentissage de plongements de mots sur des corpus en langue de spécialité : une étude d'impact**. French. In: *Rencontre des Étudiants Chercheurs en Informatique pour le Traitement Automatique des Langues (RÉCITAL, 22e édition)*. Nancy, France: ATALA et AFCEP, June 2020, pp. 164–178. URL: <https://aclanthology.org/2020.jeptalnrecital-recital.13>.
- [13] Coralie Reutenauer, Luce Lefevre, Aurélie Fouqueray, Thibault Prouteau, **Valentin Pelloin**, Cédric Lopez, Nathalie Camelin, Frédérique Segond, Nicolas Dugué, and Didier Bourigault. **Technologies sémantiques et accès à l'information dans le prescrit SNCF**. French. In: *Lambda Mu 22 (e-congrès) - 22ème Congrès de Maîtrise des Risques et de Sécurité de Fonctionnement, Institut pour la Maîtrise des Risques*. Le Havre (e-congrès), France, Oct. 2020. URL: <https://hal.archives-ouvertes.fr/hal-03476574>.

## Research activities, talks and scientific popularisation

2024	<b>AI Lab for Human and Social Sciences</b> , presentation at the kick-off conference of the AI Lab for Human and Social Sciences at the Centre d'Économie de la Sorbonne: "Automatic Classification of News Subjects in Broadcast News: Application to a Gender Bias Representation Analysis".	Paris, France
2024	<b>FIAT/IFTA world conference</b> , presentation at the International Federation of Television Archives (IFTA): "LLMs in practice: large-scale topic classification of audiovisual news".	Bucharest, Romania
2023	<b>JSALT 2023 Workshop &amp; Plein Champ Festival</b> , help in the organisation of the 2023 JSALT workshop which took place in Le Mans. In this context, scientific popularisation of the event with secondary school students and artist SARAH LEMBO at the <i>Plein Champ</i> festival.	Le Mans, France
2022	<b>JSALT 2022 Workshop</b> , involvement inside the Esperanto team (EU H2020 grant 101007666). Multilingual speech translation for under-resourced languages.	Baltimore, USA
2022	<b>Frederick Jelinek Memorial Summer Workshop</b> , attended the « <i>Eighth Frederick Jelinek Memorial Summer Workshop</i> » at Johns Hopkins University. Involvement in the organisation of a Lab Work on biometric authentication and speech synthesis (3h30).	Baltimore, USA
2021	<b>IVADO/MILA Winter School</b> , attended the Winter « <i>Deep Learning School</i> », organised by IVADO and MILA. Financing by a RFI Atlanstic 2020 grant.	online
2021, 2022	<b>European Researchers' Night</b> , organisation and scientific popularisation at LIUM stand on Artificial Intelligence.	Le Mans, France
2021, 2022	<b>Fête de la Science</b> , conception and presentation of demonstration tools on Artificial Intelligence.	Le Mans, France

## Teaching

Teaching done during my PhD at Le Mans Université for a total hours of 188h EQTD.

2022-2023	<b>IG1 ESGT et L1 MPCE2I</b> , Algorithms and Programming	14h TD, 24h TP
	<b>L2 Informatique</b> , Relational Databases	11h TP
	<b>L3 Informatique</b> , Complexity and data structures	12h TP
	<b>M2 Informatique</b> , Natural Language and Speech processing	2h CM
2021-2022	<b>IG1 ESGT et L1 MPCE2I</b> , Algorithms and Programming (Python)	14h TD, 12h TP
	<b>L2 Informatique</b> , Relational Databases	19h TP
	<b>4A ENSIM</b> , Relational Databases	3h TP
	<b>M1 Informatique</b> , Graphs and Probabilistic Automata	2h CM, 12h TP
2020-2021	<b>L1 MPCE2I</b> , Algorithms and Programming (Python)	24h TP
	<b>L2 Informatique</b> , Relational Databases	36h TP
	<b>M2 Informatique</b> , Natural Language Processing	1h TD