Dr. Titouan PARCOLLET

Associate Professor at the University of Avignon (FR)
Adjunct Researcher at the University of Cambridge (UK)

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GENERAL INFORMATION

Family name, First name:	***Parcollet Titouan***	Date of birth:	***8th July 1995***
Nationality:	***France***	Website:	***www.darnault-parcollet.fr***
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EDUCATION

2019 ***Ph.D.***, Computer Science, Avignon University, Avignon, France
Thesis: ***"Quaternion Neural Networks"***
Advisors: Mohamed Morchid and Georges Linarès
Jury: Bengio Yoshua, Artières Thierry, Allauzen Alexandre, Camelin Nathalie and Lecouteux Benjamin.

2016 ***M.Eng.***, Computer Science, Avignon University, Avignon, France
2014 ***B.Sc.***, Computer Science, Avignon University, Avignon, France

CURRENT POSITIONS

2020 – ***Associate Professor*** *(Maître de Conférences)*
Laboratoire Informatique d'Avignon, Avignon University, Avignon, FR.
2020 – ***Adjunct Researcher***
Cambridge Machine Learning Systems Lab, University of Cambridge, UK.

PREVIOUS POSITIONS

2020 – 2020 ***Senior Research Associate***
Oxford Machine Learning Systems Lab, University of Oxford, Oxford, UK.
2018 – 2018 ***Visiting Researcher***
Montréal Institute for Learning Algorithms, Montreal, CA.
2017 – 2019 ***CIFRE (industrial) Ph.D. Student***
Orkis *(company)*, Aix-en-Provence, FR
2016 – 2017 ***Research Engineer***
Laboratoire Informatique d'Avignon, Avignon University, Avignon, FR

GRANTS AND FUNDED PROJECTS

2021 – *"Simplifying and advancing the access to speech technologies with SpeechBrain"*
GENCI, National Intensive Computing Facilities **PI, €234,360**

2020 – *"Large self-supervised speech models for French"*
GENCI, National Intensive Computing Facilities **Co-PI, €135,120**

2019 – *"SpeechBrain: A General Purpose Speech Toolkit"*
Industrial Partners: *Nvidia, Dolby, Nuance, HuggingFace, Samsung, ViaDialog, OVH Cloud and Naver LABS Europe* **PI, €120,000 & Co-PI, €140,000**

2022 – *"Efficient Self-Supervised Learning for Inclusive and Innovative Speech Technologies"*
French National Funding Agency, undergoing phase 2. **PI, €469,000**

2017 ISCA Travel Grant, International Speech Communication Association

SUPERVISION OF STUDENTS AND POSTDOCTORAL FELLOWS

PhD Advisor:

Salah Zaiem, 2020 – , Co-advised with Prof. Slim Essid (Telecom Paris-Sud, FR), *"Efficient and Informed Self-supervised Learning for Audio and Speech"*.
Jarod Duret, 2021 –, Co-advised with Prof. Yannick Estève (LIA, FR), *"Expressive automatic speech-to-speech translation"*.

PhD Mentor:

Yan Gao, 2020 – , Advised by Assoc. Prof. Nicholas D. Lane (University of Cambridge, UK), *"Federated Speech Technologies under Constrained Resources"*.
Xinchi Qiu, 2020 – , Advised by Assoc. Prof. Nicholas D. Lane (University of Cambridge, UK), *"Efficient Federated Learning"*.

I recruited and mentored 12 interns and research engineers ranging from PhD students to post-docs for the SpeechBrain project since 2020 (+7 being recruited in 2022):

Ju-Chieh Chou, National Taiwan University (TW)
Jianyuan Zhong, University of Rochester (U.S.A)
Dr. Andreas Nautsch, Avignon University (FR)
Samuele Cornell, Università delle Marche (IT)
Peter Plantinga, Ohio State University (U.S.A)
Cem Subakan, University of Montréal (CA)
Sung-Lin Yeh, Tsing-Hua University (TW)
Nauman Dawalatabad, IIT Madras (IN)
Abdel Heba, University of Toulouse (FR)
Loren Lugosh, McGill University (CA)
Szu-Wei Fu, Academia Sinica (TW)
Hwidong Na, Samsung SAIL (CA)
Aku Rouhe, Aalto University (FI)

SELECTED TEACHING ACTIVITIES

2020 –	Deep Knowledge Representation [+]	*M.Eng., University of Avignon*
2020 –	Middleware [+]	*M.Eng., University of Avignon*
2020	Artificial Intelligence Application [*]	*M.Eng., University of Avignon*
2019	Tools for Machine Learning [Ψ]	*M.Eng., University of Avignon*
2022	Natural Language Processing [+]	*ENS, Paris*
Summer 2022	Deep Speech Technologies [Ψ]	*Interspeech Tutorial*
Winter 2021	Speech Technologies and Deep Learning [Ψ]	*IEEE ASRU Tutorial*
Summer 2021	Speech Technologies and Deep Learning [Ψ]	*Interspeech Tutorial*
Summer 2021	Speech Technologies and Deep Learning [Ψ]	*University of Sheffield*

[+] Organizer and Lecturer *[Ψ] Co-organizer and Co-Lecturer* *[*] Guest Lecturer*

INSTITUTIONAL RESPONSIBILITIES

2020 –	Organizer of Seminars (20+ invited speakers), University of Avignon, France
2020 –	M.Eng. Manager for Software Engineering, University of Avignon, France

SELECTED ACADEMIC SERVICES

Co-Chair	TALN '22, France RECITAL ' 22, France	Self-supervision in Audio and Speech, ICML '20, Virtual.
Session Chair	Mentor, INTERSPEECH '21	Winter school, ALPS '22
Program Committee Member	Springer, CIS '22 Springer, CG '21 ACM, Multimedia '21 ACM, IMWUT '20 Springer AACA '20 IEEE, TIP '20 IEEE, JSTSP '22	French National Research Agency '21 IEEE, Signal Processing Letters '21 IEEE, IJWMIP '20 Springer, Neural Processing Letters '20 INTERSPEECH '22, '21, '20, '19, '18 NeurIPS '21, ***top reviewer '20***, '19, '18 ICLR '22, '21, ***top reviewer '20***, '19

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2020 – Associated Member, Department of Computer Science, University of Cambridge, U.K
2017 – Member, Research Network "*International Speech Communication Association*"

SELECTED MAJOR FUNDED COLLABORATIONS

Academic collaborations – permanent members only:

2021 – Prof. Yannick Estève (LIA, FR), Prof. Corinne Fredouille (LIA, FR), Prof. Jean-François Bonastre (LIA, FR), Prof. Richard Dufour (LS2N, FR), Prof. Slim Essid (LTCI, FR), Assoc. Prof. Sahar Gannay (LISN, FR), Assoc. Prof. Mickael Rouvier (LIA, FR) *"Simplify the access to speech technologies"* – **PI**
2020 – Prof. Laurent Besacier (LIG, FR), Prof. François Porter (LIG, FR), Assoc. Prof. Solange Rossato (LIG, FR), Assoc. Prof. Benjamin Lecouteux (LIG, FR), Assoc. Prof. Didier Schwab (LIG, FR), Assoc. Prof. Fabien Ringeval, Dr., CR, Marco Dinarelli (CNRS, LIG, FR), Prof. Alexandre Allauzen (LAMSADE, FR), *"LeBenchmark: Large self-supervised speech models for French"* – **Co-PI**
2019 – Assist. Prof. Mirco Ravanelli (Mila, CA), Prof. Yoshua Bengio (Mila, CA), Prof. Renato De Mori (McGill, CA), *"SpeechBrain: A General Purpose Speech Toolkit"* – **Co-PI**
2019 – Assoc. Prof. Nicholas D. Lane (University of Cambridge, UK), Daniel J. Beutel (DE), Taner Topal (DE), Javier Fernandez-Marques (Samsung AI, UK), *"A Friendly Federated Learning Research Framework"* – **Scientific Advisor**
2018 – 2019 Assist. Prof. Mirco Ravanelli (Mila, CA), Prof. Yoshua Bengio (Mila, CA), *"The PyTorch-Kaldi Speech Recognition Toolkit"* – **Co-PI**

Selected ongoing industrial collaborations:

2022 – HuggingFace, *"Integrating SpeechBrain to Industrial Open Resources"* – **PI**
2022 – OVH Cloud, *"Large-Scale Computing for SpeechBrain"* – **Co-PI**
2022 – Baidu, *"Scaling SpeechBrain"* – **Co-PI**
2022 – Naver LABS Europe, *"Enriched Speech Recognition"* – **PI**
2022 – InSight Acoustics, *"Acoustic and Visual Speech Enhancement"* – **PI**
2021 – ViaDialog, *"Real-Time Speech Technologies Under Constrained Resources"* – **PI**

PRESS COVERAGE

2021 Le Devoir *(Quebec News) — "Google, dis-moi si tu comprends mon accent québécois"*

INVITED PRESENTATIONS

1. Audio Data Analysis and Signal Processing Group, Paris-Télécom, *"SpeechBrain: A General-Purpose Speech Toolkit"*, May 2022.
2. IDIAP, *"SpeechBrain: A General-Purpose Speech Toolkit"*, May 2022.
3. Naver Labs Europe: *"SpeechBrain: A General-Purpose Speech Toolkit"*, November 2021.
4. FestivalIA Avignon: *"SpeechBrain: A General-Purpose Speech Toolkit"*, November 2021.
5. Microsoft Research Summit Workshop on Federated Learning and Confidential Computing: *"Federated Speech Technologies"*, October 2021.
6. Machine Learning Summer Schools Taipei: *"Task Agnostic and Task Specific Self-Supervised Learning from Speech with LeBenchmark"*, August 2021.
7. Machine Learning Meetup, Rome: *"SpeechBrain: A General Speech Toolkit"*, July 2021.
8. The 2nd Annual Federated & Distributed Machine Learning Conference: *"Can Federated Learning Save the Planet?"*, June 2021.
9. Flower Summit 2021: *"Federated speech technologies made easy"*, March 2021.
10. Centre de Recherche en Automatique de Nancy: *"Should we use quaternion neural networks? Recent advances and limitations."*, March 2021.
11. Samsung AI Cambridge: *"SpeechBrain"*, February 2021.
12. Samsung AI Cambridge: *"Quaternion neural networks"*, July 2019.
13. University of Oxford: *"Quaternion neural networks"*, July 2019.

OPEN SCIENCE

Open-source softwares played a key role in the development of open science in the speech community. More precisely, the research on speech technologies is conditioned on the availability of highly specialised tools e.g, Kaldi, HTK and others. Most publications from major speech and audio conferences contain references to a toolkit. In 2018, I released my first toolkit, named PyTorch-Kaldi in collaboration with Dr. Ravanelli Mirco and Prof. Yoshua Bengio from the Montreal Institute for Learning Algorithms (Mila, CA). Despite being discontinued due to the release of SpeechBrain, it receives 100 single visitors a day in average. In 2019, I launched the SpeechBrain project with Dr. Ravanelli Mirco, Prof. Yoshua Bengio and Prof. Emeritus Renato De Mori. It is the most advanced, best performing and easiest tool for education, research and development of deep learning based speech technologies. SpeechBrain offers plenty of unique speech technologies and more than 70 state-of-the-art research and deployment ready models spanning all the sub-fields of speech and audio processing. It is an initiative gathering the financial interest of major industrials including Nuance, Samsung, Nvidia, Hugging Face, OVH and others, as well as well-known academics with 30 different institutions participating around the world e.g., MIT, University of Cambridge, IIT Madras, NTU. SpeechBrain has been featured with tutorials and discussions in all the major international speech conferences since its official release (INTERSPEECH, ASRU, ICASSP). SpeechBrain reached 3,600 stars on GitHub in 7 months while competitors such as Nvidia (Nemo), Facebook (Fairseq), ESPnet and even Kaldi took several years to reach this level of interest from the community. The code repository of SpeechBrain receives 500 unique visitors and 5,000 page views each day in average. The number of issues and pull requests open on the repository clearly indicate a linear growth of the community. To my knowledge, SpeechBrain has already been used in three summer schools and two Master courses despite existing only since March 2021. With SpeechBrain, I identified and developed a key missing research tool for the development of speech technologies greatly boosting in the long term open science, research and education.