

Anaïs LLORENS

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I am a multidisciplinary neuroscientist interested in the interface between cognitive models and brain mechanisms involved in interindividual communication, memory, language, and emotion. My research is based on behavioral and electrophysiological experiments conducted with healthy or pathologic population (scalp EEG with healthy participants and coma patients and intracranial EEG with epileptic patients). I am also active in promoting inclusivity and diversity in science.

EDUCATION

Ph.D in Neuroscience

2010-2014

Aix-Marseille Université (Fr)

“Spatiotemporal dynamics of word production”

supervised by Catherine Liégeois-Chauvel (INS, INSERM) & F.-Xavier Alario (Laboratoire de Psychologie cognitive, CNRS).

MSc in Cognitive Neurosciences

2008-2010

Aix-Marseille Université (Fr)

CURRENT RESEARCH APPOINTMENTS

Advisor to the Company Inclusive Brains SAS

Dec 2023-Dec 2024

Regulatory affairs and scientific expertise

Research Engineer 20%

Oct 2023-Oct 2024

GHU Paris psychiatrie & neurosciences, Neuro Ste Anne, Paris (Fr)

Researcher in Cognitive Neuroscience

Feb 2023-Jan 2025

FEMTO-ST Institute, CNRS/Université de Bourgogne Franche-Comté & INSERM 1266, IPNP, Sainte Anne Hospital, Paris (Fr)

Address the relationship between sound perception and consciousness – Sounds4Coma

FORMER RESEARCH APPOINTMENTS

Assistant Project Scientist

July 2021-Jan 2023

Knight lab, Helen Wills Neuroscience Institute, University of California, Berkeley (USA)

Study of prediction in language and interindividual communication using intracranial recordings

Postdoctoral Fellow

2019- 2021

Knight lab, Helen Wills Neuroscience Institute, University of California, Berkeley (USA)

Analysis of the brain network involved in prediction

Postdoctoral Fellow

2015- 2018

Oslo University Hospital HF (Norway)

In collaboration with University of California, Berkeley (USA)

Oscillatory mechanisms supporting human cognition

Visiting researcher

2014 & 2015

University of Queensland (Aus)

tDCs on language production and short-term memory

Temporary Researcher

2015

Laboratoire de Psychologie Cognitive, CNRS, Marseille (Fr)

Analysis of MEG and SEEG data.

Engineer INSERM

2014

Brain and Language Research Institute & Institut des Neurosciences des Systèmes, Marseille (Fr)

Analysis of intracranial data on “voice vs. noise”

EXPERTISE

Methods

Electroencephalography (EEG)

Magnetoencephalography (MEG)

Intra-cranial electroencephalography (iEEG)

Transcranial direct current stimulation study (tDCs)

Software

Experimental set-up: E-prime, Cogent, Brain Vision Recorder, Psychtoolbox

Data processing: Brain Vision-analyzer, Brainstorm, Matlab, EEGLAB, Fieldtrip, MRICron, SPSS, R

Other software: Inskape, CheckVocal, Office Suite

Lab management skills

Quotation for EEG equipment, meeting organization, patients scheduling, IRB writing, organization of data storage, development of semi-automated iEEG preprocessing pipelines.

Language skills

French: native

English: fluent

GRANTS AWARDED

Personal overseas research grant FRIMEDBIO

2017

Oslo University & University of California, Berkeley

Oscillatory mechanisms supporting verbal working memory (PIs Anne-Kristin Solbakk & Bob Knight)

BLRI (www.blri.fr/)

2015

FASIC (www.campusfrance.org)

2014

University of Queensland (Aus) & Aix-Marseille Université (Fr)

Word production & Short-term memory

(with F.-Xavier Alario, Marcus Meinzer & Greig De Zubicaray)

MENRT

2010-2013

Aix-Marseille Université (Fr)

Grant from the French Ministry of Research for a PhD

PEER REVIEWED PUBLICATIONS

Weber, J., Solbakk, A.-K., Blenkmann, A. O., **Llorens, A.**, Funderud, I., Leske, S., Larsson, P. G., Ivanovic, J., Knight, R. T., Endestad, T., & Helfrich, R. F. (2024). Ramping dynamics and theta oscillations reflect dissociable signatures during rule-guided human behavior. *Nature Communications*, 15(1), Article 1. <https://doi.org/10.1038/s41467-023-44571-7>

Blenkmann OA., Leske S., **Llorens A.**, Lin JJ., Chang E., Brunner P., Schalk G., Ivanovic J., Larsson PG., Knight RT., Endestad T., Solbakk AK. (2024). Anatomical registration of intracranial electrodes. Robust model-based localization and deformable smooth brain-shift compensation methods. *Journal of Neuroscience Methods*, 110056. <https://doi.org/10.1016/j.jneumeth.2024.110056>

Llorens A.*, Bellier L.*, Blenkmann OA., Ivanovic J., Larsson PG., Lin JJ., Endestad T., Solbakk AK., Knight RT. (2023). Decision and response monitoring during working memory are sequentially represented in the human insula. *iScience*. 2023 Aug 17;26(10):107653. doi: 10.1016/j.isci.2023.107653.

Bellier L., **Llorens A.**, Marciano D., Aysegul G., Schalk G., Brunner P., Knight RT, Pasley BN. (2023). Music can be reconstructed from human auditory cortex activity using nonlinear decoding models. *PLoS Biol* 21(8): e3002176. <https://doi.org/10.1371/journal.pbio.3002176>

Fuhrer J., Glette K., **Llorens A.**, Endestad T., Solbakk AK, Blenkmann AO. (2023). Quantifying Evoked through information-theoretical measures. *Front. Neuroinform.* 17 2023; <https://doi.org/10.3389/fninf.2023.1128866>

Mercier MR., Dubarry AS., Tadel F, [... Knight RT., **Llorens A...**], Lachaux JP, Oostenveld R. (2022). Advances in human intracranial electroencephalography research, guidelines and good practices. *Neuroimage* 119438. <https://doi.org/10.1016/j.neuroimage.2022.119438>.

Llorens A.*, Tzovara A.*, + 41 authors, Knight RT., Dronkers NF. (2021). **[*First authorship shared]** Gender bias in academia: a lifetime problem that needs solutions. *Neuron* 109 (13), 2047-2074; <https://doi.org/10.1016/j.neuron.2021.06.002>

Solbakk AK., Lubell J., Leske S., Funderud I., **Llorens A.**, Blenkmann OA., Foldal MD., Meling T., Knight RT., Endestad T. (2021). Monitoring of self-paced action timing and sensory outcomes after lesions to the orbitofrontal cortex. *JoCN* 1-20; https://doi.org/10.1162/jocn_a_01733

Llorens A., Funderud I., Blenkmann OA., Lubell J., Foldal M., Leske S., Huster R., Meling T., Knight RT., Solbakk AK., Endestad T. (2020). Preservation of interference effects in working memory after orbitofrontal damage. *Front. Hum. Neurosci.*, Jan 2020; <https://doi.org/10.3389/fnhum.2019.00445>

Foldal MD., Blenkmann OA., **Llorens A.**, Knight RT., Solbakk AK., Endestad T. (2020). The brain tracks auditory rhythm predictability independent of selective attention. *Scientific Reports* 10(1), 7975 (2020). <https://doi.org/10.1038/s41598-020-64758-y>

Anders R.*, **Llorens A.***, Dubarry AS., Trébuchon A., Liégeois-Chauvel C., Alario F. (2019). **[*First authorship shared]** Cortical dynamics of semantic priming and interference during word production: An intracerebral study. *JoCN.*, 2019 31:7, 978-1001 doi: 10.1162/jocn_a_01406

Blenkmann OA., Collavini S., Lubell J., **Llorens A.**, Funderud I., Ivanovic J., Larson PG., Meling T., Bekinschtein T., Kochen S., Endestad T., Knight RT., Solbakk AK. (2019). Auditory deviance detection in the human insula: An intracranial EEG study. *Cortex* 2019 121, 189-200, doi.org/10.1016/j.cortex.2019.09.002

Dubarry AS., **Llorens A.**, Trébuchon A., Carron R., Liégeois-Chauvel C., Bénar CG., Alario FX. (2017). Estimating Parallel Processing in a Language Task Using Single-Trial Intracerebral Electroencephalography. *Psychol. Sci.*, p. 0956797616681296, Feb. 2017. doi: 10.1177/0956797616681296

Llorens A., Dubarry AS., Trébuchon A., Chauvel P., Alario FX., Liégeois-Chauvel C. (2016). Contextual modulation of hippocampal activity during picture naming. *Brain Lang* 2016 Aug;159:92-101. doi: 10.1016/j.bandl.2016.05.011

Hamamé CM., Alario F., **Llorens A.**, Liégeois-Chauvel C., Trébuchon A. (2014). High frequency gamma activity in the left hippocampus predicts visual object naming performance. *Brain Lang* 2014 Aug; 135 :104-14. doi: 10.1016/j.bandl.2014.05.007

Llorens A., Trébuchon A., Riès S., Liégeois-Chauvel C., Alario F. (2014). How familiarization and repetition modulate the picture naming network. *Brain Lang* 2014 Jun;133:47-58. doi:10.1016/j.bandl.2014.03.010

Llorens A., Trébuchon A., Liégeois-Chauvel C., Alario F. (2011). Intra-cranial recordings of brain activity during language production. *Front. Psychol.* 2:375. doi: 10.3389/fpsyg.2011

PREPRINTS

Asko O., Blenkmann OA., Leske S., Funderud I., **Llorens A.**, Foldal MD., Meling T., Knight RT., Endestad T., Solbakk AK. Altered hierarchical predictive processing after lesions to the orbitofrontal cortex (submitted); *BioRxiv* 2023, <https://doi.org/10.1101/2023.01.04.521570>

PUBLICATIONS IN PROGRESS

Book Chapter: Corsi MC. & Llorens A. Signal processing for brain signals. *In Book: Neural Interfaces, Elsevier.* Editors: Theresa Vaughan & Davide Valeriana.

Marcus M., Huang H., Cho H., Alnes S., Tzovara A., Llorens A., Swift J., Knight RT., Peter B. BCI2000 Hyperscanning: Tools for Investigating Social Interaction in Humans.

Llorens A., Bellier L., Johnson E., Blenkman OA., Ivanovic J., Larsson PG., Endestad T., Solbakk AK., Knight RT. Frontotemporal dynamics of verbal working memory revealed by iEEG.

Pruvost-Robieux E., Zanello M., Landré E., Filipescu C., Benghanem S., Boutin M., Demoulin G., Moiraghi A., Pallud J., Aucoeur JJ., Gavaret M., Llorens A. What does own-name prosody tell us about the functional integrity of the medial temporal lobe?

COMMUNICATIONS

Conference

Poster presentations

European Congress of Clinical Neurophysiology (Marseille, France) May 2023

Frontotemporal dynamics during verbal working memory revealed by intracranial EEG

Helen Wills Neurosciences Institute Retreat, Tahoe (CA, USA) Sept. 2019

Preservation of working memory capacity after orbitofrontal damage

Psykologisk institutt (PSI) Christmas conference Dec. 2016

Intracranial recordings for the study of cognitive processes

Society for Neuroscience:

San Diego (CA, USA) Nov. 2022

Decision and response monitoring during working memory are sequentially represented in the human insula

Online Nov 2021

Frontotemporal dynamics of verbal working memory revealed by iEEG

Chicago (IL, USA) Oct. 2019

Preservation of working memory capacity after orbitofrontal damage

Washington, DC (MD, USA) Nov. 2017

The role of different prefrontal subareas in the inhibition of proactive interference during verbal working memory

Washington, DC (MD, USA) Nov. 2011

Spatiotemporal dynamics of picture naming: Elusive semantic effects but clear task modulations during word production

Society for the neurobiology of language:

Marseille (France) Oct 2023

Intracranial EEG recordings of interindividual communication

San Diego (CA, USA) Nov. 2013

Intra-cranial recordings of brain activity during language production

Annapolis (MD, USA) Nov. 2011

The many timings of semantic interference during word production

International Workshop on language production, New York University (NY, USA) July 2012

Spatiotemporal dynamics of picture naming: Elusive semantic effects but clear protocol modulations

10ème symposium de la société des Neurosciences Françaises, Marseille (Fr) May 2011

Spatiotemporal Dynamics of lexical access

Oral presentations

Conference CuttingEEG, Aix-En-Provence (Fr) Oct. 2021

Conducting human intracranial research

Conference CuttingEEG, Aix-En-Provence (Fr) <i>Gender bias and co-authorship, a discussion</i>	Oct. 2021
Conference « The dynamic Brain », INS, Marseille (Fr) <i>Neural dynamics of picture naming: a focus on hippocampal activity</i>	Nov. 2013
Symposium de la société de psychophysiologie et de Neurosciences cognitives, Toulouse (Fr) <i>Neural dynamics of picture naming: a focus on hippocampal activity</i>	Sep. 2013

Academic presentations

FEMTO-ST, Besançon (Fr), <i>online</i> <i>Gender bias in academia: a discussion</i>	Dec 2023
Dynamic Brain Laboratory, Northwestern University, Chicago, <i>online</i> <i>The spatiotemporal dynamics of verbal working memory revealed by iEEG</i>	June 2023
FEMTO-ST, Supmicrotech ENSMM, Besançon (Fr) <i>Gender bias in academia: time for action</i>	April 2023
Chaucer Club - MRC Cognition and Brain Sciences Unit, University of Cambridge (UK) <i>The role of the human insula in decision and response monitoring during working memory revealed by iEEG & Gender bias in academia: time for action</i>	March 2023
School of Psychology seminar series, University of Nottingham (UK) <i>The role of the human insula in decision and response monitoring during working memory revealed by iEEG & Gender bias in academia: time for action</i>	March 2023
BEACON Seminar series, Department of experimental psychology, University of Oxford (UK) <i>Gender bias in academia: a lifetime problem that needs solutions</i>	March 2023
Department of psychology, Oslo (Norway), <i>online</i> <i>Gender bias in academia: a lifetime problem that needs solutions</i>	Dec. 2022
NeuroMod Institute, Université Côte d'Azur, <i>online</i> <i>The neural basis of interindividual communication: at the interplay between memory and language</i>	March 2022
Women'sNeuroNetwork (WNN), <i>online</i> <i>Improving gender equity in Neuroscience</i>	Jan. 2022
Women in STEM: Mentoring Seminars, <i>online</i> <i>Am I the right person for giving a mentoring seminar?</i>	Jan. 2022
Open Science workshop, <i>online</i> <i>Gender equality in academia</i>	Jan. 2022
Nu Rho Psi Honor Society, Georgia State University (GA, USA), <i>online</i> <i>Gender bias in academia: We all are the right (wo)man for the job!</i>	Nov. 2021
Department of psychology, Oslo (Norway), <i>online</i> <i>Gender bias in academia: We all are the right (wo)man for the job!</i>	Nov. 2021
BENESCO Lecture Series, Inselspital University Hospital Bern (Switzerland) <i>Frontotemporal dynamics of verbal working memory revealed by iEEG</i>	Oct. 2021
Grad seminars, ZEN teaching, Inselspital University Hospital Bern (Switzerland) <i>Gender bias in (neuro)science</i>	Oct. 2021
CogNeuro Colloquium, UC Berkeley (CA, USA) <i>Frontotemporal dynamics of verbal working memory & Gender bias in academia</i>	March 2021
Conte Retreat, Columbia University <i>Prediction & working memory in the frontotemporal network</i>	May 2019
Neurology Department, University Hospital of Nancy (Fr) <i>The investigation of language and memory using SEEG</i>	Apr. 2018
Oslo-Berkeley meetings:	
Norwegian Institute in Rome (Italy) <i>The role of the OFC during inhibitory control in verbal working memory</i>	Sept. 2018
Oslo (Norway)	June 2017

<i>Inhibitory control during a verbal working memory experiment, an EEG study</i> Knight Lab, UC Berkeley (CA, USA)	March 2016
<i>Inhibitory control during a verbal working memory experiment</i> Macquarie University, Sydney (NSW, Australia)	Nov. 2014
<i>Are memory processes involved in picture naming? A SEEG study</i> School of Psychology, University of Queensland, Brisbane (QLD, Australia)	Oct. 2014
<i>Are memory processes involved in picture naming?</i> Cleveland clinic (Ohio, USA)	Apr. 2014
<i>Neural Dynamics of picture naming: EEG and SEEG studies</i> Retraite INS, Buoux (Fr)	June 2013
<i>Dynamique spatiotemporelle de la dénomination d'images</i>	

TEACHING

Msc Polytechnique-HEC entrepreneurs – introduction in Neurosciences & Neurotech <i>IPNP, Paris (Fr)</i>	2023
PIR Programme Initiation Recherche – Neurophysiology <i>Bichat Hospital, Paris (Fr)</i>	2024 & 2023
Clinical Neuroscience 290: Human Neurobiology <i>University of California, Berkeley (USA)</i>	2021
PSY 4320: Research Method in Cognitive Neuroscience <i>Oslo University (Norway)</i>	2018
PSY 4304: Current Issues in Cognitive Neuroscience <i>Oslo University (Norway)</i>	2017

SUPERVISION

Camille Des Lauriers, PhD candidate, <i>IPNP Paris</i>	2023- present
Lylia Itmacene, medical student, <i>IPNP Paris</i>	2023
Sana Zain, undergraduate student <i>UC Berkeley</i>	2018- present
Alexis Pracar, graduate student <i>UC Berkeley</i>	2022
Julian Weyermann, graduate student <i>Bern University</i>	2021
Michael Ruvalcaba, graduate student <i>UC Berkeley</i>	2021
Maxwell Good, lab manager <i>UC Berkeley</i>	2021
Kunal Puri, undergraduate student <i>UC Berkeley</i>	2021
Vaidehi Sorathia, undergraduate student <i>UC Berkeley</i>	2021
Kiara Veliz, undergraduate student, via The McNair scholars Program <i>UC Berkeley</i>	2020
Aashta Shah, undergraduate student <i>UC Berkeley</i>	2020
Richard Jimenez, lab manager <i>UC Berkeley</i>	2020
Will Chang, research assistant <i>UC Berkeley</i>	2018- 2019
Christina Thunberg, graduate student <i>Oslo University</i>	2018
Kate Rigall, graduate student <i>University of Queensland</i>	2016
Bastien Intartaglia, graduate student <i>Aix-Marseille University (Fr)</i>	2011-2012
Emma Vilarem, graduate student <i>Aix-Marseille University (Fr)</i>	2011
PhD thesis committee member	
Sara Simula, graduate student <i>Aix-Marseille University (Fr)</i>	2022

REVIEWER

Invited reviewer:

Aperture
Brain and Language
Cell reports
Cerebral Cortex
eLife
European Journal of Neurology
Frontiers in Neuroanatomy
Frontiers in Neuroscience
Neuropsychologia
Scientific Reports

Grant Reviewer:

Nencki Institute of Experimental Biology of the Polish Academy of Sciences

Review Editor:

Frontiers in Language Sciences - Neurobiology of Language

PROFESSIONAL MEMBERSHIPS

Executive board member of CuttingEEG association (organization of yearly workshops and conferences)	2022- present
Member of the Society for Neuroscience	2012- present
Member of the organization board and the scientific board of WIRED 3	2023
Member of Frontiers for Young Minds – French version	2023

OUTREACH

Radio, Voice of Islam, London Girls' Rights and social care	Oct 2023
Press article, Les Echos Des émotions dans les handitechs	Sept 2023
Invitation to a panel on navigating fundings in academia <i>by the Women in Neuroscience Repository (online)</i>	Sept 2022
Press article, Nature Swiss funder unveils new CV format to make grant evaluation fairer	June 2022
Press article, AWIS Magazine, Spring 2022 issue Gender bias in academia	April 2022
Invitation to a panel on preventing Gender Bias in Science <i>by the UK Government's Science & Innovation Network, based at the British Consulate in San Francisco</i>	March 2022
Press article, Nature Index A new form of CV for researchers	Aug. 2021
Press article, UC Berkeley News For neuroscientists, a checklist for eliminating gender bias	July 2021
Lecture recorded for kids in French as part of the conference OHBM 2021, Disseminated in French-speaking schools (France, Canada, USA), and followed by a live review with kids "Et si toi aussi tu devenais scientifique?" (What if you too became a scientist?)	June 2021