

Pablo Arias-Sarah



Born on the 28th of April 1990 (34 years old)
 In Bogota, Colombia
 Nationality : French, Colombian

1 Carreer

- Since Oct 2024 **Lecturer** at the University of Glasgow, School of Neuroscience and Psychology (University of Glasgow).
- Oct 2022-Oct 2024 **Postdoctoral Marie Curie Fellow** at the University of Glasgow, School of Neuroscience and Psychology, in collaboration with Lund University (Lund, Sweden). Resp. : Prof. Philippe Schyns & Prof. Rachael Jack (University of Glasgow).
- 2019–2022
3 years, incl. 10 month sabbatical break **Postdoctoral Researcher** at Lund University Cognitive Science, Choice Blindness Lab, Department of Philosophy (Lund, Sweden), in collaboration with IRCAM (Paris, France). Resp. : Dr. Petter Johansson (Lund University ; Swedish Collegium for Advanced Study).
- 2019
7 months **Postdoctoral Researcher** at Sciences and technologies for music and sound (STMS UMR9912), IRCAM/CNRS/Sorbonne Université (Paris, France). Resp. : Dr. Jean-Julien Aucouturier (STMS).
- 2015–2018
3 years **Assistant Researcher** at the Sciences and technologies for music and sound laboratory (STMS UMR9912), IRCAM/CNRS/SU (Paris, France). Resp. : Dr. Jean-Julien Aucouturier (CNRS).
- 2015
6 months **Research Engineer** at the Perception and Sound Design team (IRCAM/CNRS/Sorbonne Université), Paris, France. Resp. : Jean-Julien Aucouturier (CNRS).
- 2014
6 months **Research Internship** at IRCAM/CNRS/Sorbonne Université (Paris, France). Resp. : Frédéric Bevilacqua (IRCAM), Norbert Schnell (IRCAM), Jules Françoise (IRCAM).
- 2013
6 months **Computer Science Engineer** at Flux : Sound and picture and Development (Orléans, France). Resp. : Gael Martinet (Flux).
- Before 2013 Research project at Polytech' Nantes (music neuroscience, Nantes, France) ; Research Internship at BK Birla Institute Of Engineering and Technology (embedded hardware development, Pilani, India) ; Internship at Eowave (analog musical instrument development, Paris, France) ; Research Project at Polytech Nantes (Midi controller development) ; Research Project with G.E. Healthcare (signal processing).

2 Education

- 2015–2018 **PhD in Cognitive Science**, from Sorbonne Université (Paris, France).
Title : “*The cognition of auditory smiles : a computational approach*”. Dir. :
Jean-Julien Aucouturier (IRCAM/CNRS/SU), Pascal Belin (CNRS/Aix
Marseille Univ.), Patrick Susini (IRCAM/CNRS/UPMC). Jury : Rachael
Jack (Univ. Glasgow), Tecumseh Fitch (Uiv. Vienna), Julie Grèzes (ENS),
Catherine Pelachaud (ISIR), Martine Gavaret (Univ. Paris Descartes). Doc-
toral school : Cerveau, Cognition, Comportement (ED3C).
- 2013–2014 **Master of Science**, Acoustics, signal processing and computer science ap-
plied to music. Sorbonne Université (Paris, France).
- 2010–2013 **Master of Engineering**, Engineer in Electronics and digital technologies
specialized in multimedia. Polytech’ Nantes (Nantes, France).
- 2008–2010 **Two year Preparatory University Degree**, Mathematics & computer
science. Institute of sciences and techniques. Nantes University (Nantes,
France).
- 1994–2008 **Elementary & Secondary School**, Scientific Baccalauréat specialized in
mathematics with awards (French national diploma). ICFES (Colombian
national diploma). Lycée Français Louis Pasteur (Bogota, Colombia).

Online courses and certifications

- 2015–2016 **Principles of fMRI 1 and 2**, Coursera course organised by Johns Hopkins
University. (online course)
- 2014–2015 **Neuroanatomy certification**, obtained from Neurocourses, King’s College
University of London (Londres, UK).

3 Publications

In prep

1. Arias Sarah, P., Denis G., Aucouturier J-J., Hall L., Schyns P., Jack, R., & Johansson P. *DuckSoup : An open-source experimental platform to manipulate facial and vocal signals during social interactions.* (in prep)

Peer-reviewed

1. Arias-Sarah, P., Bedoya, D., Daube, C., Aucouturier, J-J., Hall, L. & Johansson, P. *Aligning the smiles of dating dyads increases liking.*. Proceedings of the National Academy of Sciences, 121(45), e2400369121. [open access]
2. Le Moine Veillon, C. , Rosi V., Arias Sarah P., Salais, L., Obin N. (2024, April). *BWSNET : Automatic Perceptual Assessment of Audio Signals.* In the proceedings of the International Conference on Acoustics, Speech and Signal Processing (ICASSP, pp. 10416-10420). IEEE. [open access]
3. Nakai T, Rachman L, Arias Sarah P., Okanoya K & Aucouturier J-J (2023) *Algorithmic voice transformations reveal the phonological basis of language-familiarity effects in cross-cultural emotion judgments.* PLoS ONE 18(5) : e0285028. [open access]

4. Rodriguez, H., Arias Sarah, P., & Canonne, C. (2023). *Contrasts of Register Underlie the Perception of Musical Humor*. *Music Perception : An Interdisciplinary Journal*, 40(4), 316-333. [open access]
5. Arias Sarah, P., Hall, L., Saitovitch, A., Aucouturier, J-J., Zilbovicius, M. & Petter Johansson (2023) *Pupil dilation reflects the dynamic integration of audiovisual emotional speech*. *Scientific Reports*, 13, 5507 [open access]
6. Rosi, V., Arias Sarah, P., Houix, O., Misdariis, N., & Susini, P. (2023). *Shared mental representations underlie metaphorical sound concepts*. *Scientific Reports*, 13(1), 5180. [open access]
7. Salais, L., Arias, P., Le Moine, C., Rosi, V., Teytaut, Y., Obin, N., & Roebel, A., (2022) *Production Strategies of Vocal Attitudes*. In *Interspeech 2022* (pp. 4985-4989). ISCA. [open access]
8. Bedoya, D., Arias, P., Rachman, L., Liuni, M., Canonne, C., Goupil, L. & J-J. Aucouturier, (2021) *Even a violin can cry : Expressive cues of specific vocal origin drive the perception of emotions in both vocal and non-vocal music*. *Philosophical Transactions of the Royal Society B*, 376(1840), 20200396. [open access]
9. Arias, P., Bellmann, C., Aucouturier, & Aucouturier, JJ. (2021) *Facial mimicry in the congenitally blind*. *Current Biology*, 31(19), R1112-R1114. [open access]
10. Arias, P., Rachman, L., Liuni, M. & Aucouturier, JJ. (2020) *Beyond correlation : voice-transformation methods for the experimental study of emotional speech*. *Emotion Review*. [open access]
11. Wollman, I., Arias, P., Aucouturier, J-J., & Morillon, B. (2019). *Neural entrainment to music is sensitive to melodic spectral complexity*. *Journal of Neurophysiology*. [open access]
12. Arias, P., Belin, P. & Aucouturier, JJ. (2018) *Auditory smiles trigger unconscious facial imitation*. *Current Biology*, vol.28(14), R782-R783.[open access]
13. Ponsot, E., Arias, P. & Aucouturier, J-J. (2018) *Uncovering mental representations of smiled speech using reverse correlation*. *The Journal of the Acoustical Society of America*, vol. 143 (1), EL19–EL24. [open access]
14. Arias, P., Soladie, C., Bouafif, O., Robel, A., Segulier, R., & Aucouturier, J. J. (2018). *Realistic transformation of facial and vocal smiles in real-time audiovisual streams*. *IEEE Transactions on Affective Computing*. [open access]
15. Rachman, L., Liuni, M., Arias, P., Lind, A., Johansson, P., Hall, L., ... & Aucouturier, J. J. (2018). *DAVID : An open-source platform for real-time transformation of infra-segmental emotional cues in running speech*. *Behavior research methods*, 50(1), 323-343. [open access]

My complete list of publications can be found online here.

4 Grants

- 2022 DuckSoup : An open-source experimental platform to manipulate participants' facial and vocal attributes during social interactions. Swedish Research Council. Co-awarded to Lars Hall & Petter Johansson (Lund University Cognitive Science, Lund, Sweden) ; 450k€
- 2022 Sound Environment Infrastructure Grant. Co-awarded to Petter Johansson (Lund University Cognitive Science, Lund, Sweden) ; 5k€
- 2022 Marie Skłodowska-Curie postdoctoral Fellowship. SINA (Studying Social Interactions with Audiovisual Transformations). w/ Philippe Schyns & Rachael E. Jack (University of Glasgow) and Petter Johansson ; 190k£

- 2021 Sorbonne Université Emergence. Revolt (Revealing Human Bias with Real Time Vocal Deep Fakes). Co-awarded to Nicolas Obin. 60k€
- 2019 Postdoctoral position received in an open international competition by Lund University; The Crafoord Foundation

5 Scientific Communication

Patents

1. Arias, P., Aucouturier, J-J. & Roebel., A., Method and apparatus for dynamic modifying of the timbre of the voice by frequency shift of the formants of a spectral envelope. (2017), (EP2018/053433).

Theses

1. Arias, P., (2018). The cognition of auditory smiles : a computational approach. PhD Thesis. [open access]
2. Arias, P., Françoise, J., Bevilacqua, F., & Schnell, N. (2014). Sound description and synthesis in the MaD (Mapping by demonstration) framework. M. Sc. Thesis.

Conferences

[*] Best talk award

1. Arias Sarah, P. Causal social interaction research with voice and face transformation filters, School of Psychology and Neuroscience Research dday. University of Glasgow, UK, September 2024. [*] - best talk.
2. Arias-Sarah, P., Denis, G., Aucouturier, J-J., Jack, R. E., Schyns. P. G., , & Johansson, P., Hall, L., Causal social interaction research with voice and face transformations. ESCAN - Conference of the European Society for Cognitive and Affective Neuroscience. Ghent, Belgium. May 2024.
3. Arias Sarah, P., Causal social interaction research with voice and face transformations. The Society for Affective Science conference (SAS). New Orleans, USA. March 2024. [*] - best flash talk.
4. Arias Sarah, P., Denis, G., Hall, L., Aucouturier, J-J. , Schyns. P. G. , Jack, R. E. , & Johansson, P. (2023) DuckSoup : An experimental platform to study social interactions with AI transformation filters. Social AI Workshop, Glasgow, UK. September 2023.
5. Arias Sarah, P., Denis, G., Hall, L., Aucouturier, J-J. , Schyns. P. G. , Jack, R. E. , & Johansson, P. (2023) DuckSoup : a videoconference experimental platform to transform participants' voice and face in real-time during social interactions. Cognitive Computational Neuroscience conference. Oxford, UK. August 2023. [open access]
6. Nölle, J., Wu, Y., Arias, P., Yang, Y., Garrod, O. G., Schyns, P. G., & Jack, R. E. (2023) Multimodal markers of confidence and doubt : Inferring Feeling of Knowing from facial movements. 16th International Cognitive Linguistics Conference [open access]
7. Nölle, J., Wu, Y., Arias, P., Garrod, O. G. B., Schyns, P. G. & Jack, R. E. (2022). More Than Affect : Human Facial Expressions Provide Iconic and Pragmatic Functions. In Proceedings of the Joint Conference on Language Evolution (JCoLE). [open access]
8. Rodriguez, H., Arias, P., & Canonne, C. (2021). Investigating the pragmatic effects of musical syntax through musical humor. In 15th International Symposium of Cognition, Logic, and Communication.

9. Arias, P., Influencing romantic decisions with real time smile transformations, Virtual Social Interaction Conference, online, University of Glasgow, June 2021.
10. Arias, P., Computational techniques to synthesize emotional stimuli, Society for Affective Science Conference, worldwide/online, April 2021.
11. Arias, P., Bedoya, D., Johansson, P., Hall, L.& Aucouturier, J-J., Controlling dyadic interactions with real-time smile transformations. Society for Affective Science Conference, worldwide/online, April 2021.
12. Arias, P., Belin, P., & Aucouturier, J.-J., Hearing smiles and smiling back. Laughter workshop. Institut des Systèmes Intelligents et de Robotique (ISIR). Paris, France, September 2018.
13. Arias, P., Auditory smiles trigger unconscious facial reactions. Contextual : How the Social Context Shapes Brain and Behaviour. International conference of the European Society for Cognitive and Affective Neurosciences (ESCAN). Leiden, NL, July 2018.
14. Arias, P., Belin, P. , & Aucouturier, J.-J., Unconsciously imitating smiles heard in speech —and hearing smiles in musical sounds. European Research Music Conference. Barcelona, Spain, June 2018.
15. Arias, P., Ziggy : the rise and fall of zygomatic muscles in speech. Conference of the Consortium of European Research on Emotions (CERE), Glasgow, United Kindgom, April 2018.
16. Arias, P., Représentations mentales du sourire dans la voix parlé : une étude par corrélation inverse. Congrès Français d’Acoustique (CFA), Le Havre, France, Mars 2018.
17. Arias, P., Spectral cues caused by smiling trigger unconscious facial imitation. Music Language and Cognition Summer School. Como, Italy, June 2017.
18. Arias, P., Emotional mimicry induced by manipulated speech. Workshop on Music cognition, emotion and audio technology in Tokyo. University of Tokyo, Tokyo, Japan, November 2016.
19. Arias, P., Emotional mimicry induced by manipulated speech. Journées Jeunes Chercheurs en Audition Acoustique musicale et Signal audio (JJCAAS). France, Paris, November 2016.
20. Arias, P., Time perception and neural oscillations modulated by speech rate. Festival IRCAM-Manifeste, Paris, France, October 2016.
21. Rachman, L., Liuni, M., Arias, P., & Aucouturier, J. J., Synthesizing speech-like emotional expression onto music and speech signals. In Fifth International Conference on Music and Emotions. ICME4, Geneva, CH, October 2015.

Invited Talks

1. Arias Sarah, P. Manipulating social signals during interactions to uncover their causal effect on social behavior, Univeristy College London (UCL), UK, June 2024.
2. Arias Sarah, P. A modular seminar on the use of voice/face transformations in social interaction research. California Institute of Technology (Caltech), USA, February 2024.
3. Arias Sarah, P. Manipulating social signals during interactions to uncover their causal effect on social behavior. University of California, Los Angeles (UCLA), USA, February 2024.
4. Arias Sarah, P. Causal social interaction research with transformation filters, Hearing Science Institute, The University of Nottingham, Glasgow, UK, August 2023.
5. Arias Sarah, P. Studying interacting dyads as coupled dynamical systems, Femto-ST, July 2023.

6. Arias, P., Manipulating social signals in real time during social interactions, Methods and Meta Science, University of Glasgow, May 2023
7. Arias, P., Studying social interactions with voice and face transformations, Mosaic grand challenge, online, October 2022
8. Arias, P., Hacking social interactions with real time voice/face transformations, Karolinska Institutet, Stockholm, September 2021
9. Arias, P., Hacking social interactions with real time voice/face transformations, Universidad de El bosque, Bogota, Colombia, August 2021
10. Studying social interactions with real time voice/face transformations, IRCAM, Paris, France. July 2021.
11. Arias, P., Manipulating speed dating interactions with real time smile transformations. Equipe Neuro-Ethologie Sensorielle. Saint-Etienne, France. June 2021
12. Arias, P., Manipulating speed dating interactions with real time smile transformations. Social Cognitive Neuroscience Lab, Hebrew University of Jerusalem, Israel. June 2021.
13. Arias, P., Beyond correlation : voice-transformation methods for the experimental study of voice perception. Lund University cognitive science, Lund, Sweden. February 2020
14. Arias, P., Entendre les émotions dans la voix de l'autre. Présentation Invité. INJA, Paris, France, November 2019.
15. Arias, P., Hearing facial expressions of emotion, the case of the smile, cSCAN, Glasgow, Scotland, April 2019.
16. Arias, P., Intégration audiovisuelle des sourires, une étude eye tracking, 5ième Journée du club eye tracking et autisme, Tours, France, Mars 2019
17. Arias, P. Hearing Facial Expressions of Emotion, the case of the smile. Inst Neurosciences des Systèmes. Marseille, France. May 2019
18. Arias, P., Unconscious physiological reactions to smiles in speech revealed by super-vp's frequency warping. Journée RIM. IRCAM, Paris, France, October 2017.
19. Arias, P. Spectral cues caused by smiling trigger unconscious facial imitation, Language Music and Cognition Summer School, Lake Como School of Advanced Studies, 24-26 June 2017, Como, Italy
20. Arias, P., Unconscious reactions to auditory smile. ISIR. Paris, France. May 2017.

6 Teaching and management

Course Coordination

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| 2024-2025 | Glasgow Univeristy (Glasgow, Uk). Social Robotics Masters Course, coordination with Rachael E. Jack. |
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Lectures

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| 2024 | Glasgow Univeristy (Glasgow, Uk). Social Robotics Masters Course, "Using psychological knowledge to understand social perception and inform robot design", total : 2h. |
| 2021 | Centrale Supelec (Rennes, France). Master Course, "Voice and face processing technology for the study of unconscious human behavior", total : 1h. |
| 2019 | New York University (NYU). Master Course, "Essential Aspects of Voice Perception", total : 3h. |

- 2018- Ircam Composition Cursus. Master Course. “Essential Aspects of Voice Per-
2019 ception”, 2 x 2 hours, total : 4h.

PhD external examining

Andrey Anikin, *Human non-verbal vocalizations*. Cognitive Science, Lund University (2020).

Workshops and tutorials

1. Arias Sarah, P., Aucouturier, J-J. , Schyns. P. G. & Hall, L., Introducing DuckSoup, a platform to perform social interaction experiments online while manipulating participants’ voice and face. ESCAN - Conference of the European Society for Cognitive and Affective Neuroscience Tutorials. Ghent, Belgium. May 2024.
2. Arias, P., Trois outils de traitement de la voix émotionnelle et leurs effets physiologiques. École nationale d’ingénieurs de Tunis (ENIT), Journée d’études : TICs, Musique et émotion. Tunisie, Tunis, Janvier 2018.
3. Arias, P., Liuni M., Transformations émotionnelles de la voix parlée —conséquences comportementales et physiologiques. Journée voix - Studio 5 en direct, IRCAM, Paris, October 2017.

Management and supervision

Daniel Zander (Research Assistant, 2024), Rudradeep Guha (PhD Student, 2023), Clement Lemoine (Post-doc, 2023), Guillaume Denis (software engineer, 2020-2023), Sarah Vlasitz (Master Student, 2022, in collaboration with Tecumseh Fitch and Friederike Range, University of Vienna, Austria), Daniel Bedoya (Research Assistant, 2019), Lou Seropian (Research Assistant, 2018), Louise Vasa (Research Assistant, 2017), Mael Garnotel (Research Assistant, 2016).

7 Scientific Contributions

Conference/Scientific Events Organisation

- 2024 Mosaic (Multimodal Social Interactions group), Grand Challenge Organizer ;
2024 Intelligent Virtual Agents (IVA), Demo co-chair, 2024 ;
2022 Smila workshop, “Smiling and Laughter across contexts and the life-span“, Program Committee, 2022
2022 “Affective Computing and Intelligent Interaction 2022” (ACII), Workshop Chair, Nara, Japan, 18-21 October, 2022 ;
2016 “Journées Jeunes Chercheurs en Audition, Acoustique Musicale et Signal audio (JJCAAS)”, Paris, 23, 24, 25 November 2016 ;

Reviewer

Intelligent Virtual Avatars (IVA), Language & cognition (2024), IScience (2023), Emotion (2023), Psychological Science (2023, 2024), IEEE International Joint Conference on Biometrics (2023), Cognitive Computational Neuroscience Conference (2023), ACM Transactions on Interactive Intelligent Systems (2022), Nature Scientific Reports (2021), Royal Society Open Science (2021), Emotion (2021), Journal of Nonverbal Behavior (2021) ; Psychonomic Bulletin & Review (2021), Frontiers Digital Health (2020) ; Language Resources and Evaluation (2019) ; Journal of Experimental Social Psychology (JESP) (2019) ; Musicæ Scientiæ (2016) ;

8 Scientific Dissemination

Software packages and resources

Mastok	A Master Orchestrator for social interactive experiments, Arias Sarah P., Denis G. [open source]
Mozza	A gstreamer plugin to transform facial smiles in real time. Coming in open source format in 2023. Kermarec L., Arias Sarah P. , Aucouturier J-J.
DuckSoup	A videoconference experimental platform to perform social interaction experiments while manipulating participants voice/face in real time. Denis, G., Arias Sarah P. , Aucouturier J-J, Hall, L., Johansson P., [open source]
STIM	A python toolbox to process and analyse experimental video and audio stimuli. Arias Sarah, P. [open source]
Ziggy	A real time algorithm to parametrically control smiles in speech. Arias Sarah, P. [open source]
NCSE	Neutral content said emotionally voice dataset [open data]

Open source code : <https://github.com/Pablo-Arias/STIM>

Multimedia content

Documentary :	“Craquer le code émotionnel de la musique” (réal. Mailys Audouze, 2014-2021 ; currently in festivals) https://vimeo.com/185950491
Podcasts :	“Perception of Smiles in the Voice.” The Voice Tech Podcast (2018) “Souriez vous-êtes écoutés : le son des émotions”, Savant Sachant Chercher, Science Infuse (2019)

Scientific events for the general public

Sound and Behavior roundtable, the week of sound, UNESCO (Jan. 2021) ; portes ouvertes IRCAM (2015-2019) ; journée voix IRCAM (2017) ; Science Agora Tokyo (Nov. 2016) ; Ircam Forum (2016) ;

General Media

French media	Le Monde, Science et Avenir, Valeurs Actuelles, Konbini France
UK Media	The Herald Scotland, The democrat, The times, The independent, Daily Guardian, Inverness Courier, The telegraph and argus, Belfast Telegraph, Skynews, Irish News, The Scotsman, The standard, Phys, Myscience, Vator, Jersey evening post, MI3, it-online, Info-flash, Digit.fyi, UK News Yahoo
International media	Cosmos Magazine, Discover, Quartz, Vrt nws, NPO Radio 1, Vator, Mais Conhecere, Pieuvre, One Arabia, Pressetext, PolskieNews, RMF 24, AOL UK
Radio	Silicon Scotland, BBC Scotland Drivetime, Capital FM, Heart West, Smooth Radio, Heart Scotland West

See an example in Quartz

9 Interests & skills

Current interests :	Social interactions, social dynamics, multimodality, human emotions, imitation, social alignment, unconscious emotion processing, affective reactions, vocal and facial expressions of emotion, affective computing, voice and face transformations, artificial intelligence.
Measures :	Electromyography, eye tracking, pupillometry, electrodermal activity, electroencephalography, sensorless physiology (computer-vision based face analysis), voice and speech analysis, behavior.
Experimental paradigms :	auditory reverse correlation, facial mimicry, speed dating, interactive psychophysics, decision making, free social interactions, stimulus response.
Data analysis & statistics :	Data wrangling, Generalised linear mixed models (GLMMs), permutation tests, time series analysis (e.g, cross-correlation, Transfer Response Functions, Mutual Information), causal mediation, social relation models
Programing :	Python (polars, pandas, numpy, conda, ...), R (lmer, mediation, ...), Docker, Singularity, Slurm, High Performance Computing (HPC), git, HTML, C++.
Speech & sound :	Digital signal processing, acoustics, sound analysis, sound design, Max, Ableton Live, Praat, mixing, mastering, music theory, piano, guitar, OSC (Open Sound Control), MIDI (Musical Instrument Digital Interface).
Personal :	Cooking (vegetarian, french, indian and colombian traditional recipes), Composition and music production. Hiking (autonomous, solo, multiday, e.g. Écrins (2020), Mercantour (2021), Tour du Beaufortain 2022, Tour du Queyras 2023, aspiring munro bagger). Meditation (10 day silent meditation retreat in 2020), cycling, jogging, chess, yoga, critical listening.