

Antoine Coutrot

PhD

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Research Interests

Keywords : spatial time series, statistical modeling, machine learning, multimodal signal processing, image processing, eye-tracking, attention, saliency models, scanpath, spatial navigation, individual differences, face perception, crowdsourcing, data visualization, popularisation of science.

Work Experience

since 2021 Tenured Researcher (chargé de recherche), *Centre National de la Recherche Scientifique (CNRS)*, Laboratoire d'InfoRmatique en Image et Systèmes d'information (LIRIS) - UMR 5205 , Lyon, France.

2018-2021 Tenured Researcher (chargé de recherche), *Centre National de la Recherche Scientifique (CNRS)*, Laboratoire des Sciences du Numérique de Nantes (LS2N) - UMR 6004, Nantes, France.

2017-2018 Postdoctoral Fellow, *Institute of Behavioural Neuroscience*, University College London, UK.

collaborators : Prof. Spiers, Prof. Hornberger, Deutsche Telekom, Saatchi & Saatchi

subject Understanding human navigation using mobile gaming, big data and machine learning.

2016-2017 Research Associate, *School of Biological and Chemical Sciences*, Queen Mary University of London, UK.

collaborators : Dr. Isabelle Mareschal & company Lumen

subject Machine leaning applied to eye-tracking data : feasibility test

2014-2016 Research Fellow, *CoMPLEX (Centre for Mathematics, Physics and Engineering in the Life Sciences and Experimental Biology)*, University College London, UK.

collaborator : Prof. Alan Johnston

subject Statistical modeling of eye movements during visual perception, face exploration.

2011-2014 PhD Student, *Gipsa-lab, Vision and Brain Signal Processing Team*, University of Grenoble-Alpes, France, supervisors : Prof. Alice Caplier & Dr. Nathalie Guyader.

subject How does sound impact on visual exploration of videos? Behavioural and computational approaches - Integration of auditory information in visual saliency models.

award Best PhD award, University of Grenoble-Alpes

video 6 min, French, English subtitles www.youtube.com/watch?v=Wf863-B0FuI

Education

2011-2014 PhD, *Gipsa-lab, Vision and Brain Signal Processing Team*, University of Grenoble-Alpes, France.

- 2010–2011 **M. Sc, Cognitive Science**, University of Grenoble-Alpes, France.
2007–2011 **Engineer school**, Grenoble Institute of Technology (*Phelma*), Grenoble-INP, France.
2005–2007 **Preparatory Classes, Mathematics and Physics**, *MPSI–MP**, Paris, France.

Grants and Awards

Grants

- 2022 *PORTRAIT : Analyse des relations entre profil, comportement, et ressenti des joueurs en réalité virtuelle*, LIRIS, 20000€, role : co-PI with Elise Lavoué, Audrey Serna and Guillaume Lavoué.
- 2021-2024 *Eye-tracking and skin conductance measures for improved neurofeedback analysis and validation*, INRIA : *Actions Exploratoires*, 250000€, role : co-PI with Claire Cury, Elise Bannier and Pierre Maurel.
- 2021-2023 *Co-enregistrement et analyse de trajectoires spatiales et oculaires pour le diagnostic précoce de la maladie d'Alzheimer*, IXXI - Institut rhônalpin des systèmes complexes, 5000€, role : PI.
- 2021 *Appel à soutien pour équipement*, Fédération Informatique de Lyon, 8000€, role : PI.
- 2020-2024 *Determinants of information selection during vision*, Leverhulme Trust, £297644, role : co-PI with Isabelle Mareschall and Peter Bex.
- 2018 - 2022 *Crohn-IPI : deep-learning and visual attention for computer-aided diagnosis of the Crohn disease*, Interdisciplinary project funded by the University of Nantes, 150000€, role : co-PI with Harold Mouchère, Nicolas Normand and Arnaud Boureille.
- 2018 - 2022 *Cadysit : Capturing the dynamics and the singularity of trajectories*, co-funded by RFI Atlantic2020 and RFI Ouest Industries Créatives, 106000€, role : PI.
- 2016–2017 Named postdoc on *Mareschal & Hansard "Machine learning applied to eye-tracking data : feasibility test"*, EPSRC Institutional Sponsorship.
- 2014–2016 2020 Science Fellowship of the British Engineering and Physical Sciences Research Council (EPSRC), 2 years post-doc position.
- 2011–2014 Doctoral contract funded by the French Ministry for Higher Education and Research, with junior lectureship (monitorat), 3 years *PhD fellowship*.

Awards

- 2015 **Best PhD award**, University of Grenoble-Alpes (746 applicants all disciplines combined), Grenoble, France.
- 2013 **Best paper award**, 14th International Workshop on Image and Audio Analysis for Multimedia Interactive Services (*WIAMIS 2013*), Paris, France.
- 2012 **Best paper award**, 15e journées *COmpression et REprésentation des Signaux Audiovisuels (CORESA 2012)*, Lille, France.
- 2012-2013-2014 **Best presentation award** (3 years in a row), *EEATS Doctoral School PhD Students' Day*, Grenoble, France.

Teaching

- 2020 **Masterclass on leveraging video games for scientific research**, *Master Cultures Numériques*, University of Nantes, France, 3 hours.
- 2019 **Introduction to Statistics**, *Master of Computer Science, Visual Computing (VICO)*, University of Nantes, France, 8 hours.

- 2018-2019 **Visual Attention - Principles and Models**, *Master of Computer Science, Visual Computing (VICO)*, University of Nantes, France, 26 hours.
- 2012–2014 **During my PhD (monitorat)**, *Grenoble Institute of Technology*, Grenoble, France, Level : Engineer School - from BSc (3rd year) to MSc.
- Mathematics : Lectures (25h) and Tutorials (48h)
Complex Analysis, Partial differential equations, Fourier and Laplace transforms
 - Signal Processing : Tutorials (55h)
Digital Signal Processing, Spectral Analysis, Speech Processing, Image Processing

Supervision

PhD students

- 2021-2024 **Sophie Heer** - *Determinants of Information Selection During Vision*, *Queen Mary University of London, UK*, co-supervision with Isabelle Mareschal, supervision rate = 10%.
- 2019-2022 **Hippolyte Dubois** - *Capturer la dynamique et la singularité des trajectoires*, *University of Nantes, France*, co-supervision with Patrick Le Callet, supervision rate = 60%.
- 2018-2021 **Rémi Vallée** - *Using visual attention when learning deep neural networks for computer-aided medical diagnosis*, *University of Nantes, France*, co-supervision with Harold Mouchère and Nicolas Normand, supervision rate = 30%.

Master students

- 2019 **Hippolyte Dubois** - *Using machine learning to capture and model the singularity of spatial trajectories*, *Master VICO, University of Nantes, France*, co-supervision with Harold Mouchère.
- 2018 **Liao Xiangyu** - *Gaze-based classification during face exploration*, *Master VICO, University of Nantes, France*.
- 2018 **Lena Coutrot** - *Spatial ability : from a video game to the real world*, *CogMaster, Ecole Normale Supérieure, Paris, France*, co-supervision with Roberto Casati and Hugo Spiers.
- 2013 **Philippe Benjamin** - *Implementation of a Graphical User Interface for Eye-Tracking Data*, *Engineer school Phelma, University of Grenoble-Alpes, France*, co-supervision with Nathalie Guyader.

Popularization of science

On human spatial navigation

Events

- Conference at the Centre de culture scientifique d'Angers : Terre des Sciences, on 08/12/2021 - *Quand le jeu vidéo nourrit la Recherche*.
- Talk at the festival "La science entre en Jeu", colloque 'Science et Jeux' on 13/04/2021 - *Sea Hero Quest, la recherche sur Alzheimer avec le jeu vidéo*.
- Demo at La Nuit Blanche des Chercheurs in Nantes on 06/02/2020 - *Sea Hero Quest : jouer pour comprendre la maladie*.
- Round-table at the festival Les Utopiales in Nantes on 01/11/2019 - *Jeu vidéo et recherche scientifique*.
- Talk at the Café des Sciences in Nantes on 10/04/2019 - *Le jeu vidéo au service de la recherche scientifique*.

- Talk at the festival Pint of Science in Nantes on 24/05/2018 - *Sea Hero Quest : un jeu vidéo pour dépister la démence*
- *Lates* at the Science Museum of London on Nov 2017

Media coverage (selection)

- [BBC - Radio 4](#) - 19/04/2022.
- [The Conversation](#) - 18/04/2022.
- [World Economic Forum](#) - 12/04/2022.
- [ARTE - 28 minutes](#) - 07/04/2022.
- [Radio Télévision Suisse - CQFD](#) - 07/04/2022.
- [El Pais](#) - 02/04/2022.
- [Radio Canada - Les années lumière](#) - 01/04/2022.
- [France Culture - La Méthode Scientifique](#) - 01/04/2022.
- [France Info - Le billet sciences](#) - 01/04/2022.
- [M6 - Le Journal de 1945](#) - 31/03/2022.
- [France Inter - Journaux de la matinale](#) - 31/03/2022.
- [Spiegel](#) - 31/03/2022.
- [The New York Time](#) - 30/03/2022.
- [Science & Vie](#) (page 129) - 03/2021.
- [The Economist](#) - 06/02/2020.
- [New Scientist](#) - 06/02/2020.
- [RTS Radio Télévision Suisse - émission CQFD](#) - 01/07/2019.
- [France 2](#) - 27/06/2019.
- [Les Echos](#) - 04/05/2019.
- [RTBF](#) - 27/04/2019.
- [CNN](#) - 27/04/2019.
- [France Inter - Le journal de 7h30](#) - 25/04/2019.
- [CNRS - Le Journal](#) - 24/04/2019.
- [France Inter - La Tête Au Carré](#) - 24/04/2019.
- [France Inter - La Tête Au Carré](#) - 20/06/2018.
- [L'Express](#) - 01/06/2018.
- [Rolling Stone](#) - 06/03/2018.
- [Scientific American](#) - 18/11/2016.
- [The Guardian](#) - 17/11/2016.
- [The Guardian](#) - 19/05/2016.
- [CNN](#) - 04/05/2016.

On human visual perception

Events

- Demo at La Nuit Blanche des Chercheurs in Nantes on 06/02/2020 - *"Un oculomètre pour analyser le regard."*
- Eye-tracking experiment at the Science Museum of London on Nov-Dec 2016

Media coverage (selection)

- [Science et Avenir](#) - 06/12/2016.
- [The Huffington Post](#) - 02/12/2016.
- [Le Monde](#) - 29/11/2016.
- [Science](#) - 05/07/2016.
- [Scientific American Mind](#) - 17/05/2015.

Other

- Membre de la commission transversale "Sciences - Société" du Comité Consultatif Régional pour la Recherche et le Développement Technologique (CCRRDT) de la Région des Pays de Loire - depuis 2020
- Chargé de mission "médiation scientifique" au LS2N - depuis 2018
- Participation à la semaine du cerveau à Grenoble, 2011 - 2014
- Animateur la Main à la Pâte à Grenoble, 2008 - 2009

Reviewing

- grants National Science Foundation (USA).
- multi-disciplinary Scientific Reports; PLoS ONE.
- signal processing journals IEEE Transactions on Image Processing; IEEE Transactions on Multimedia; IEEE Transactions on Affective Computing; IEEE Transactions on Emerging Topics in Computing; Journal of Electronic Imaging; Signal Processing : Image Communication; EURASIP Journal on Image and Video Processing; Journal of Visual Communication and Image Representation.
- signal processing conferences IEEE International Conference on Image Processing (ICIP); IEEE International Conference on Multimedia and Expo (ICME); IEEE International Conference on Systems, Man, and Cybernetics (SMC); European Signal Processing Conference (EUSIPCO); ACM International Conference on Interactive Media Experiences (IMX).
- cognitive science journals Cognition; Behavior Research Methods; Journal of Vision; Psychological Research; Psychological Review; Visual Cognition; Attention, Perception, & Psychophysics; Journal of Experimental Psychology : General; Aging and Mental Health; Gerontology; Alzheimer's Research & Therapy; Autism Research; Spatial Cognition and Computation; Projections : The Journal for Movies and Mind; Transactions on Applied Perception; Psychology of Aesthetics, Creativity, and the Arts; Journal of Eye Movement Research; frontiers in Neuroscience; frontiers in Psychiatry; frontiers in Psychology; Biological Psychology; Neuropsychologia; Psychoneuroendocrinology; Advances in Cognitive Psychology; Spatial Cognition and Computation; Computational Intelligence and Neuroscience; Reviews in the Neurosciences; Cognitive Systems Research.
- cognitive science conferences Annual Meeting of the Cognitive Science Society (CogSci); Eye Tracking Research & Application (ETRA); Applied Vision Association (AVA); Conference on Music & Eye-Tracking.
- other Machine Learning and Knowledge Extraction; Symmetry; Sensors; Future Internet; Applied Sciences; Journal of Imaging; Journal of Applied Bioinformatics & Computational Biology; International Journal of Geo-Information.

Toolbox, Database, Benchmark

- database Sea Hero Quest (trajectories of 4 millions players) - <https://shqdata.z6.web.core.windows.net/>.
- database Eye-tracking on dynamic natural scenes (72 participants) - <http://antoinecoutrot.magix.net/public/databases.html>.
- database Eye-tracking on conversational scenes (40 participants) - <http://antoinecoutrot.magix.net/public/databases.html>.
- database Eye-tracking on faces (405 participants) - <http://antoinecoutrot.magix.net/public/databases.html>.
- database Crohn-IPI dataset : Multi-expert annotation of 3498 Crohn's disease images of the small bowel - <https://crohnipi.ls2n.fr/>.
- database Head + Eye movements on 360 degrees videos - <https://salient360.ls2n.fr/datasets/>.
- benchmark Salient360! - Visual Attention Modeling for 360° Content - <https://salient360.ls2n.fr/grand-challenges/icme18/>.
- toolbox Scanpath Modeling and Classification with Hidden Markov Models (SMAC with HMM) soon available at <http://antoinecoutrot.magix.net/public/code.html>.
- code Matlab code linked to the paper "*Learning a master saliency map from eye tracking data in videos*" : <http://antoinecoutrot.magix.net/public/code.html>.

Publications

Preprints

- Zisch, Fiona E* and Newton, Coco* and **Coutrot, Antoine*** and Murcia, Maria and Motala, Anisa and Greaves, Jacob and de Cothi, William and Steed, Anthony and Tyler, Nick and Gage, Stephen A and Spiers, Hugo. *Comparable human spatial memory distortions in physical, desktop virtual and immersive virtual environments*, bioRxiv, doi : <https://doi.org/10.1101/2022.01.11.475791>, 2022. *Authors contributed equally to this work
- **Coutrot, Antoine** and Guyader, Nathalie. *Learning a master saliency map from eye-tracking data in videos*, arXiv :1702.00714, 2017.

Journal Papers

- **Coutrot, Antoine** and Manley Ed and Goodroe, Sarah and Gahnstrom, Chris and Filomena, Gabriele and Yesiltepe, Demet and Dalton, Ruth C and Wiener, Jan and Hölscher, Christoph and Hornberger, Michael and Spiers, Hugo. *Entropy of city street networks linked to future spatial navigation ability*, Nature, Vol. 604, pp 104-110, 2022.
- Quesque, François and **Coutrot, Antoine** and [55 co-authors] and Bertoux, Maxime. *Does culture shape our understanding of others' thoughts and emotions? An investigation across 12 countries*, Neuropsychology, 2022.
- Spiers, Hugo and **Coutrot, Antoine** and Hornberger, Michael. *Explaining World-Wide Variation in Navigation Ability from Millions of People : Citizen Science Project Sea Hero Quest*, Topics in Cognitive Science, Early View, 2021.

- de Maissin, Astrid and Vallée, Rémi and Flamant, Mathurin and Fondain-Bossiere, Marie and Le Berre, Catherine and **Coutrot, Antoine** and Normand, Nicolas and Mouchère, Harold and Coudol, Sandrine and Trang, Caroline and Boureille, Arnaud. *Multi-expert annotation of Crohn's disease images of the small bowel for automatic detection using a convolutional recurrent attention neural network*, Endoscopy International Open, Vol. 9, pp E1136 - E1144, 2021.
- Yesiltepe, Demet and Ozbil Torun, Ayse and **Coutrot, Antoine** and Hornberger, Michael and Spiers, Hugo and Conroy Dalton, Ruth. *Computer models of saliency alone fail to predict subjective visual attention to landmarks during observed navigation*, Spatial Cognition & Computation, 2020.
- Porffy, Lilla and Bell, Victoria and **Coutrot, Antoine** and Wigton, Rebekah and D'Oliveira, Teresa and Mareschal, Isabelle and Shergill, Sukhwinder. *Oxytocin effects on eye movements in schizophrenia*, Schizophrenia Research, Vol. 216, pp 279-287, 2020.
- Coughlan, Gillian and **Coutrot, Antoine** and Khondoker, Mizanur and Minihane, Anne Marie and Spiers, Hugo and Hornberger, Michael. *Toward personalized cognitive diagnostics of at-genetic-risk Alzheimer's disease*, PNAS, Vol. 116, No 19, pp 9285-9292, 2019.
- **Coutrot, Antoine** and Schmidt, Sophie and Coutrot, Lena and Pittman, Jessica and Hong, Lynne and Wiener, Jan and Hölscher, Christoph and Dalton Ruth C and Hornberger, Michael and Spiers, Hugo. *Virtual navigation tested on a mobile app is predictive of real-world navigation performance*, PLoS ONE, Vol. 14, No. 3, e0213272, 2019.
- **Coutrot, Antoine** and Silva, Ricardo and Manley Ed and de Cothi, Will and Sami, Saber and Bohbot, Véronique and Wiener, Jan and Hölscher, Christoph and Dalton, Ruth C and Hornberger, Michael and Spiers, Hugo. *Global determinants of navigation ability*, Current Biology, Vol. 28, pp 1-6, 2018.
- Harrison, Charlotte and Binetti, Nicola and **Coutrot, Antoine** and Johnston, Alan and Mareschal, Isabelle. *Personality traits do not predict how we look at faces*, Perception, Vol. 47, No 9, pp 976-984, 2018.
- **Coutrot, Antoine** and Hsiao, Janet and Chan, Antoni. *Scanpath modeling and classification with Hidden Markov Models*, Behavior Research Methods, Vol. 50, No 1, pp 362-379, 2018.
- Rider, Andy and **Coutrot, Antoine** and Pellicano, Elizabeth and Dakin, Steven and Mareschal, Isabelle. *Semantic content outweighs low-level saliency in determining children's and adult's fixation of movies*, Journal of Experimental Child Psychology, Vol. 166, pp 293-309, 2018.
- Le Meur, Olivier and **Coutrot, Antoine** and Le Roch, Adrien and Helo, Andrea and Rama, Pia and Liu, Zhi. *Visual attention saccadic models learn to emulate the evolution of gaze patterns from childhood to adulthood*, IEEE Transactions on Image Processing, Vol. 26, No 10, pp 4777-4789, 2017.
- **Coutrot, Antoine** and Binetti, Nicola and Harrison, Charlotte and Mareschal, Isabelle and Johnston, Alan. *Face exploration dynamics differentiate men and women*, Journal of Vision, Vol. 16, No. 14, pp 1-19, 2016. This work has been covered in 36 news outlets (Altmetric 01/2017).

- Binetti, Nicola and Harrison, Charlotte* and **Coutrot, Antoine*** and Johnston, Alan and Mareschal, Isabelle. *Pupil dilation as an index of preferred mutual gaze duration*, Royal Society Open Science, Vol. 3, No. 160086, 2016. * Authors contributed equally to this work. This work has been highlighted in **Science** (doi : 10.1126/science.aag0640) and in 39 news outlets (Altmetric 01/2017).
- Le Meur, Olivier* and **Coutrot, Antoine***. *Introducing context-dependent and spatially-variant viewing biases in saccadic models*, Vision Research, Vol. 121, pp 72-84, 2016. * Authors contributed equally to this work.
- **Coutrot, Antoine** and Guyader, Nathalie. *How Saliency, Faces and Sound influence gaze in Dynamic Social Scenes*, Journal of Vision, Vol. 14, No. 8, pp 1-17, 2014.
- **Coutrot, Antoine** and Guyader, Nathalie and Ionescu, Gelu and Caplier, Alice. *Video viewing : do auditory salient events capture visual attention ?*, Annals of Telecommunications, Vol. 69, No. 1 pp 89-97, 2014.
- **Coutrot, Antoine** and Guyader, Nathalie and Ionescu, Gelu and Caplier, Alice. *Influence of soundtrack on eye movements during video exploration*, Journal of Eye Movement Research, Vol. 5, No. 4, pp 1-10, 2012.

Book Chapter

- **Coutrot, Antoine** and Guyader, Nathalie. *Multimodal saliency models for videos*, in "From Human Attention to Computational Attention : a Multidisciplinary Approach", Matei Mancas and Vincent P. Ferrera and Nicolas Riche and John G. Taylor (eds), New York : Springer Series in Cognitive and Neural Systems, Chapter 16, 2016.

International Conferences

- Cheng, You (Lilian) and He, Chuanxiuyue (Carol) and Spiers, Hugo and **Coutrot, Antoine** and Hornberger, Michael and Hegarty, Mary and Chrastil, Elizabeth R. *Self-evaluations of navigation ability : a big data approach*, Psychonomic Society Annual Meeting, Nov 2021 (covid-19 edition).
- Dubois, Hippolyte and Le Callet, Patrick and **Coutrot, Antoine**. *How do our demographics shape our trajectories ?*, International Conference on Spatial Cognition (ICSC), Sept 2021 (covid-19 edition).
- Vallée, Rémi and **Coutrot, Antoine** and Normand, Nicolas and Mouchère, Harold. *Influence of expertise on human and machine visual attention in a medical image classification task*, European Conference on Visual Perception, Aug 2021, online (covid-19 edition).
- Dubois, Hippolyte and Le Callet, Patrick and **Coutrot, Antoine**. *Visualizing navigation difficulties in video game experiences*, International Conference on Quality of Multimedia Experience (QoMEX), Jun 2021 (covid-19 edition).
- **Coutrot, Antoine** and Kibleur, Astrid and Trousselard, Marion and Lefranc, Barbara and Ramdani, Céline and Stepien, Karolina and Varoqui, Deborah and Chatel-Goldman, Jonas. *The influence of emotion and empathy on gaze patterns when exploring controlled static and ecological dynamic faces*, Vision Science Society (VSS), May 2021 (covid-19 edition).
- Pishdadian, Sara* and **Coutrot, Antoine*** and Hornberger, Michael and Spiers, Hugo and Rosenbaum, Shayna R. *Big data meet deep data : characterizing spatial navigation in hippocampal amnesia*, Cognitive Neuroscience Society, March 2021 (covid-19 edition). * Authors contributed equally to this work

- Dubois, Hippolyte and Le Callet, Patrick and Hornberger, Michael and Spiers, Hugo and **Coutrot, Antoine**. *Capturing and Explaining Trajectory Singularities using Composite Signal Neural Networks*, European Conference on Signal Processing (EUSIPCO), Jan 2021, Amsterdam, The Netherlands (covid-19 edition).
- Yesiltepe, Demet and Dalton, Ruth C and Ozbil, Ayse and **Coutrot, Antoine** and Hornberger, Michael and Spiers, Hugo. *A Study on Visual and Structural Characteristics of Landmarks and Experts' and Non-experts' Evaluations*, Spatial Cognition, Aug 2020 (covid-19 edition).
- Quesque, François and **Coutrot, Antoine** and [55 co-authors] and Bertoux, Maxime. *The impact of culture on neuropsychological performance : a global social cognition study across 12 countries*, Alzheimer's Association International Conference (AAIC), Jul 2020, Chicago, IL, USA.
- Vallée, Rémi and de Maissin, Astrid and **Coutrot, Antoine** and Mouchère, Harold and Boureille, Arnaud and Normand, Nicolas. *CrohnIPI : an endoscopic image database for the evaluation of automatic Crohn's disease lesions recognition algorithms*, SPIE Medical Imaging, Feb 2020, Houston, TX, USA.
- de Maissin, Astrid and Vallée, Rémi and Normand, Nicolas and **Coutrot, Antoine** and Mouchère, Harold and Trang, Caroline and Boureille, Arnaud. *Crohn's disease lesion detection by small-bowel capsule endoscopy : an automatic deep learning method*, United European Gastroenterology Week, Oct 2019, Barcelona, Spain.
- West, Greg L and Patai, Zita E and **Coutrot, Antoine** and Hornberger, Michael and Spiers, Hugo and Bohbot, Véronique D. *Landmark-dependent navigation strategy use within a mobile video game declines with age and is associated with better memory performance*, Society for Neuroscience (SfN), Oct 2019, Chicago, IL, USA.
- Vallée, Rémi and de Maissin, Astrid and **Coutrot, Antoine** and Normand, Nicolas and Boureille, Arnaud and Mouchère, Harold. *Accurate small bowel lesions detection in wireless capsule endoscopy images using deep recurrent attention neural network*, IEEE International Workshop on Multimedia Signal Processing (MMSP), Sept 2019, Kuala Lumpur, Malaysia.
- **Coutrot, Antoine** and Kibleur, Astrid and Le Chénéchal, Morgan and Lefranc, Barbara and Ramdani, Céline and Trousselard, Marion and Chatel-Goldman, Jonas. *Idiosyncratic face exploration strategy is influenced by face's emotion type and observer's empathic profile*, European Conference on Visual Perception, Aug 2019, Leuven, Belgium.
- **Coutrot, Antoine** and Silva, Ricardo and Manley Ed and de Cothi, Will and Sami, Saber and Bohbot, Véronique and Wiener, Jan and Hölscher, Christoph and Dalton, Ruth C and Hornberger, Michael and Spiers, Hugo. *Testing the navigation skills of 3.7 million participants with a video game*, symposium "Big data in vision science", European Conference on Visual Perception, Aug 2019, Leuven, Belgium.
- Yesiltepe, Demet and Dalton, Ruth C and Ozbil, Ayse and Dalton, Nick and Noble, Sam and Hornberger, Michael and **Coutrot, Antoine** and Spiers, Hugo. *Usage of Landmarks in Virtual Environments for Wayfinding : Research on the influence of global landmarks*, Space Syntax Symposium, Jul 2019, Beijing, China.

- **Coutrot, Antoine** and Patai, Zita and Silva, Ricardo and Manley Ed and Wiener, Jan and Hölscher, Christoph and Dalton, Ruth C and Hornberger, Michael and Spiers, Hugo. *Cities have a negative impact on navigation ability : Evidence from mass online assessment via Sea Hero Quest*, Society for Neuroscience (SfN), symposium "Human Cognition and Behavior : Spatial Learning and Navigation", Nov 2018, San Diego, CA, USA.
- Helo, Andrea and Le Meur, Olivier and **Coutrot, Antoine** and Liu, Zhi and Rama, Pia and Le Roch, Adrien. *Age-dependent saccadic models*, International Congress of Infant Studies (ICIS), symposium "Enhancing the interpretation of infant gaze behavior using modeling approaches", July 2018, Philadelphia, USA.
- David, Erwan and **Coutrot, Antoine** and Perreira Da Silva, Matthieu and Gutierrez, Jesus and Le Callet, Patrick. *Omnidirectional gaze data : feedbacks from the creating process of a new 360 degrees videos, head & gaze dataset*, Grenoble Workshop on Models and Analysis of Eye Movements, June 2018, Grenoble, France.
- David, Erwan and Gutierrez, Jesus and **Coutrot, Antoine** and Perreira Da Silva, Matthieu and Le Callet, Patrick. *A dataset of head and eye movements for 360 degrees videos*, ACM Multimedia Systems Conference (MMSys), June 2018, Amsterdam, The Netherlands.
- Gutierrez, Jesus and David, Erwan and **Coutrot, Antoine** and Perreira Da Silva, Matthieu and Le Callet, Patrick. *Introducing UN Salient360! Benchmark : A platform for evaluating visual attention models for 360° contents*, International Conference on Quality of Multimedia Experience (QoMEX), May 2018, Cagliari, Italy.
- Porffy, Lilla and Wigton, Rebekah and **Coutrot, Antoine** and Joyce, Dan and Mareschal, Isabelle and Shergill, Sukhi. *Oxytocin Enhances Visual Attention to Facial Stimuli in Patients with Schizophrenia : Evidence from an eye-tracking study*, Schizophrenia International Research Society Conference, April 2018, Florence, Italy.
- **Coutrot, Antoine** and Sterling, Amy and Szantner, Attila and Yin, Kathleen. *Scientific Research Using Games : Using Player Power for Good*, Game Developer Conference (GDC), March 2018, San Francisco, USA.
- Marighetto, Pierre and **Coutrot, Antoine** and Riche, Nicolas and Guyader, Nathalie and Mancas, Matei and Gosselin, Bernard. *Audio-Visual Attention : Eye-tracking Dataset and Analysis ToolBox*, IEEE International Conference on Image Processing (ICIP), Sept 2017, Beijing, China.
- Le Meur, Olivier and **Coutrot, Antoine** and Le Roch, Adrien and Helo, Andrea and Rama, Pia and Liu, Zhi. *Age-dependent saccadic models for predicting eye movements*, IEEE International Conference on Image Processing (ICIP), Sept 2017, Beijing, China.
- Le Meur, Olivier and **Coutrot, Antoine** and Liu, Zhi and Rama, Pia and Le Roch, Adrien and Helo, Andrea. *Your Gaze Betrays Your Age*, European Signal Processing Conference (EUSIPCO), Aug 2017, Kos island, Greece.
- **Coutrot, Antoine**. *SMAC with HMM : a toolbox to model and classify scanpaths with Hidden Markov Models*, European Conference on Eye Movements (ECEM), Aug 2017, Wuppertal, Germany.
- **Coutrot, Antoine** and Le Meur, Olivier. *An age-dependent saccadic saliency model*, European Conference on Eye Movements (ECEM), Aug 2017, Wuppertal, Germany.

- Chan, Antoni B. and **Coutrot, Antoine**. *Classifying eye gaze patterns and inferring individual preferences using hidden Markov models*, Asia Pacific Vision Conference, symposium "Understanding individual differences in eye movement patterns", July 2017, Taiwan.
- **Coutrot, Antoine**. *SMAC with HMM : a toolbox to model and classify scanpaths with Hidden Markov Models*, Applied Vision Association (AVA) Christmas Meeting, Dec 2016, London, UK.
- **Coutrot, Antoine** and Le Meur, Olivier. *Visual attention saccadic models : taking into account global scene context and temporal aspects of gaze behaviour*, European Conference on Visual Perception (ECVP), Aug 2016, Barcelona, Spain.
- **Coutrot, Antoine** and Binetti, Nicola and Harrison, Charlotte and Mareschal, Isabelle and Johnston, Alan. *Gaze behaviour provides a gender fingerprint*, Vision Science Society (VSS), May 2016, Florida, USA.
- Le Meur, Olivier and **Coutrot, Antoine**. *How saccadic models help predict where we look during a visual task ? Application to visual quality assessment*, SPIE Image Quality and System Performance, Feb 2016, San Francisco, USA.
- **Coutrot, Antoine** and Guyader, Nathalie. *An efficient audiovisual saliency model to predict eye positions while looking at conversations*, European Signal Processing Conference (EUSIPCO), Sept 2015, Nice, France.
- **Coutrot, Antoine** and Guyader, Nathalie. *Tell me how you look and I will tell you what you are looking at*, Vision Science Society (VSS), May 2015, Florida, USA.
- Binetti, Nicola and Harrison, Charlotte and **Coutrot, Antoine** and Mareschal, Isabelle and Johnston, Alan. *Reciprocating the gaze of others : how we look and how long we like to be looked at*, Vision Science Society (VSS), May 2015, Florida, USA.
- Harrison, Charlotte and Binetti, Nicola and **Coutrot, Antoine** and Mareschal, Isabelle and Johnston, Alan. *Individual differences in preference for mutual gaze duration*, Vision Science Society (VSS), May 2015, Florida, USA.
- Frisson, Christian and Riche, Nicolas and **Coutrot, Antoine** and Guyader, Nathalie and Manca, Matei and Mital, Parag K. *et al. Auracle : how are salient cues situated in audiovisual content ?*, International Summer Workshop on Multimodal Interfaces (eINTERFACE'14), Aug 2014, Bilbao, Spain.
- **Coutrot, Antoine** and Guyader, Nathalie. *An audiovisual attention model for natural conversation scenes*, IEEE International Conference on Image Processing (ICIP), Oct 2014, Paris, France.
- **Coutrot, Antoine** and Guyader, Nathalie. *Exploration of dynamic natural scenes : influence of unrelated soundtracks on eye movements*, In Proc. 17th European Conference on Eye Movements (ECEM), Aug 2013, Lund, Sweden.
- **Coutrot, Antoine** and Guyader, Nathalie. *Toward the Introduction of Auditory Information in Dynamic Visual Attention Models*, In Proc. 14th International Workshop on Image and Audio Analysis for Multimedia Interactive Services (WIAMIS), July 2013, Paris, France (invited conference). **Best paper award.**

National Conferences & Seminars

- **Coutrot, Antoine**. *Sea Hero Quest : Testing the navigation skills of 4 million participants with a video game*, Séminaire scientifique de la Fédération Informatique de Lyon, Lyon, France, May 2022.

- **Coutrot, Antoine.** *Influence of culture on cognition - Insights from two large scale cross-cultural neuropsychological projects*, Seminar at the SaxeLab Social Cognitive Neuroscience Laboratory, Massachusetts Institute of Technology (MIT), Cambridge, MA, USA, Jun 2021.
- Vallée, Rémi and **Coutrot, Antoine** and Normand, Nicolas and Mouchère, Harold. *Influence de l'expertise sur l'attention humaine et artificielle dans des images médicales*, Journées Scientifiques de l'université de Nantes, IA et interdisciplinarité : applications en santé et industrie, Jun 2021, Nantes, France.
- Dubois, Hippolyte and Le Callet, Patrick and **Coutrot, Antoine.** *Mesurer les déplacements dans l'espace : comment définir l'entropie d'une trajectoire*, Journée des Doctorants de l'Université de Nantes, May 2021, Nantes, France.
- Quesque, François and **Coutrot, Antoine** and Ibanez, Agustin and Hornberger, Michael and Bertoux, Maxime and INSCD. *Influence de la culture sur les performances neuropsychologiques : une comparaison de la cognition sociale à travers 12 pays*, Journées de Neurologie de Langue Française, May 2021, online (covid-19 edition).
- **Coutrot, Antoine.** *Testing the navigation skills of 4 million participants with a video game*, Seminar at the Newman Memory Lab, Indiana University, Bloomington, IN, USA, Mar 2021.
- **Coutrot, Antoine.** *Testing the navigation skills of 4 million participants with a video game*, Seminar at the Aging in Vision and Action Lab, Institute of Vision, Paris, Mar 2021.
- **Coutrot, Antoine.** *Can audiovisual scene features efficiently predict human visual attention ?*, Workshop "Analysis of body motion behaviour" organized by the Audio Information Processing Group at the Technical University of Munich, Jan 2021, online.
- Dubois, Hippolyte and Le Callet, Patrick and **Coutrot, Antoine.** *Génération automatique de graphe pour modéliser les singularités de trajectoires spatiales*, Rencontres des Jeunes Chercheur.ses en Intelligence Artificielle (RJCIA), Jul 2020, online (covid-19 edition).
- **Coutrot, Antoine.** *What drives individual differences in spatial navigation : evidence from mass online assessment via a video game*, Seminar at the Scene Grammar Lab, Goethe Universität Frankfurt, Germany, Jun 2020.
- **Coutrot, Antoine** and Acquadro, Michael. *Improving Patient Adherence and Outcome Measurement with Game Design*, Xtalks webinar, Feb 2020, World Wide Web.
- Vallée, Rémi and **Coutrot, Antoine** and Normand, Nicolas and Mouchère, Harold. *Réseau de neurones récurrent à attention pour la détection de lésions intestinales*, ORASIS, journées francophones des jeunes chercheurs en vision par ordinateur, May 2019, Nantes, France.
- **Coutrot, Antoine.** *How to drastically increase the sample-size of human-based datasets ? Feedbacks from a video-game*, Folle Journée de l'Imagerie Nantaise, Feb 2019, Nantes, France.
- **Coutrot, Antoine.** *Capturing the singularity of gaze behaviour to inform visual attention modeling*, Université de Nantes, séminaire du LS2N, December 2016, Nantes, France.
- **Coutrot, Antoine.** *Capturing the singularity of gaze behaviour to inform visual attention modeling*, Université de Rennes, séminaire de l'IRISA, December 2016, Rennes, France.

- **Coutrot, Antoine** and Mareschal, Isabelle and Johnston, Alan. *Modelling the dynamic and individualistic characteristics of gaze behaviour with Hidden Markov Models*, Queen Mary University of London seminar, May 2016, London, United Kingdom.
- **Coutrot, Antoine** and Mareschal, Isabelle and Johnston, Alan. *Statistical modelling of face exploration*, University of Hong Kong seminar, Department of Psychology, May 2016, Hong Kong.
- **Coutrot, Antoine** and Binetti, Nicola and Harrison, Charlotte and Mareschal, Isabelle and Johnston, Alan. *Gaze behaviour provides a gender fingerprint*, City University seminar, January 2016, London, United Kingdom.
- **Coutrot, Antoine** and Binetti, Nicola and Harrison, Charlotte and Mareschal, Isabelle and Johnston, Alan. *Gaze behaviour provides a gender fingerprint*, In 9th Annual Forum of GDR-Vision, December 2015, Grenoble, France.
- **Coutrot, Antoine** and Alan Johnston. *Statistical modelling of face exploration*, In 2020 Science Fellows meeting, July 2015, Oxford, United Kingdom.
- **Coutrot, Antoine** and Guyader, Nathalie. *Intégration de l'information sonore et visuelle pour prédire les régions regardées dans des scènes de conversations*, In La Saillance Visuelle : de son exploitation à son évaluation, Journée transverse GdR ISIS et GdR Vision, June 2014, Paris, France.
- **Coutrot, Antoine** and Guyader, Nathalie. *Modèle de saillance audiovisuelle pour des scènes de conversations dynamiques*, In Workshop Eye-Tracking Regard Interactions et Suppléances (ERIS 2014), June 2014, Paris, France.
- **Coutrot, Antoine** and Caplier, Alice and Guyader, Nathalie. *Look at me when I'm talking! Influence of sound on visual exploration of conversation scenes*, EEATS Doctoral School PhD Students' Day, April 2014, Grenoble, France. **Best presentation award.**
- **Coutrot, Antoine** and Guyader, Nathalie. *How sound influences the visual exploration of dynamic scenes*, In 7th Annual Forum of GDR-Vision, October 2013, Paris, France.
- **Coutrot, Antoine** and Guyader, Nathalie. *Prise en compte du son dans les modèles d'attention visuelle dynamiques*, 4th Meeting of the Grenoble Cognition Pole, June 2013, Grenoble, France.
- **Coutrot, Antoine** and Caplier, Alice and Guyader, Nathalie. *Impact of Sound on Visual Exploration*, EEATS Doctoral School PhD Students' Day, March 2013, Grenoble, France. **Best presentation award.**
- **Coutrot, Antoine** and Guyader, Nathalie and Ionescu, Gelu and Caplier, Alice. *Exploration libre de vidéos : influence du son sur les mouvements oculaires consécutifs à un évènement sonore saillant*, Actes des 15èmes journées COmpression et REprésentation des Signaux Audiovisuels (CORESA 2012), May 2012, Lille, France. **Best paper award.**
- **Coutrot, Antoine** and Caplier, Alice and Guyader, Nathalie. *Influence of soundtrack on eye movements*, EEATS Doctoral School PhD Students' Day, March 2012, Grenoble, France. **Best presentation award.**