



Research Experience

- 2022–
Now **Postdoctoral Researcher**, UNIVERSITY OF GLASGOW, Inference, Dynamics and Interaction group, Glasgow, UK.
- **Head of the group**: Pr. Roderick Murray-Smith.
 - **Research goals**: Combining cognitive modelling and machine learning to improve human-computer interactions, I am presently part of a large-scale interdisciplinary project called Quest, where the goal is to foresee what could be a smart house that helps you to meet your own goals while still respecting your privacy. My personal focus is on developing an algorithm that personalises nudging for people to stick with an exercise plan using an Active Inference-based algorithm, balancing out how to learn from the user while maximising adherence to the plan.
- 2018–22 **Postdoctoral Researcher**, AALTO UNIVERSITY, User Interfaces group, Espoo, Finland.
- **Head of the group**: Pr. Antti Oulasvirta.
 - **Research goals**: Also combining cognitive modelling and machine learning to improve human-computer interactions, I focused on bringing part of answers to two main questions:
 - How to improve the personalisation of self-teaching applications, by making inferences on the user's cognitive characteristics. The core idea here is to use a cognitive model that can account for several key individual- and material-specific characteristics related to recall/forgetting, along with a planning technique that considers users' practice schedules.
 - How to apply decision-making models to naturalistic human-computer interaction data (e.g. gaming data). The core idea here is to evaluate the uncertainty in the inference of the model's parameters, to deliver robust interpretations about the user's cognitive characteristics.
- In both of these research lines, I combined the use of 'classic' cognitive models (e.g., Prospect Theory), and the use of machine learning algorithms (e.g., Gaussian processes) to develop techniques that allow for better adaptability of user interfaces to the specific needs of each individual user.
- 2014–18 **PhD Student**, SORBONNE UNIVERSITY, ECOLE NORMALE SUPÉRIEURE, UNIVERSITY OF BORDEAUX, Paris & Bordeaux, France.
- **Thesis title**: From *homo economicus* to non-human primates: Three case studies on cognitive micro-foundations of economics.
 - **Supervision**: Pr. Sacha Bourgeois Gironde & Pr. Thomas Boraud.
 - **Funding**: Ministerial grant allocated by the doctoral school [three first years]; grant from ANR (French National Research Agency) [last year].
 - **Research goals**: The purpose of this PhD was twofold: (i) enquire about the cognitive foundations of economics and (ii) reveal interaction effects between agents' cognitive abilities and economic structure. As a means to fulfil this purpose, we use variate techniques, from theoretical modelling and computer-based simulations to the conduct of experiments with humans and non-human primates (macaques). Under the various possible approaches to deal with this matter, we decided to focus on three case studies: (i) the cognitive bias in the context of decision-making under risk in non-human primates, (ii) the minimal conditions required for money emergence understood as an agreement on a unique medium of exchange, (iii) the impact of cognitive characteristics both of firms and consumers on the market structure in case of duopoly competition.
- 2013–14 **Intern**, PANTHÉON-SORBONNE UNIVERSITY, Paris, France.
- 2nd year Master thesis.
 - **Thesis title**: Free-will and decision-making.
 - **Supervision**: Pr. Maximilian Kistler & Pr. Jacques Dubucs.
 - By developing a multi-criterion decision-making model, the thesis argues that: (i) agents perform two types of choices when acting: one that can be considered first order is between available actions and the other that can be considered of second order is between different representations of the frame of the choice, (ii) situating free-will in the second order choice allows one to go beyond the classical problem of compatibility between determinism and ability to choose otherwise.

- 2012–13 **Intern**, ECOLE NORMALE SUPÉRIEURE, UNIVERSITY OF GENEVA, Paris, France & Geneva, Switzerland.
- 1st year Master thesis.
 - **Thesis title**: Reactive attitudes and ascriptions of moral responsibility: an empirical investigation.
 - **Supervision**: Pr. Paul Egré & Dr. Florian Cova.
 - To understand the ascription of moral responsibility, it has been proposed to shift the focus from metaphysical issues about determinism to people's practices such as their reactive attitudes, such as resentment or praise. In collecting participants' reactions towards the story of a famous murderer (Robert Harris) and their beliefs about the link between his childhood and his actions, we sought to determine: (i) if the reactive attitudes indeed drive the ascription of moral responsibility and (ii) if the reactive attitudes are sensitive to the question of determinism.

Teaching Experience

2018–22 **Aalto University**, Espoo, Finland.

- **ELEC-E7890 - User Research**
 - Professor in charge: Pr. Antti Oulasvirta and myself.
 - Audience: Master students in Computer Science.
 - Course objectives: Provide the students with the conceptual and technical skills required to test interactive technologies with users, involving the whole path from designing experiments to conducting them and analyzing the collected data, and drawing the appropriate implications.
- **ELEC-E7851 - Computational User Interface Design**
 - Professor in charge: Pr. Antti Oulasvirta.
 - Audience: Master students in Computer Science.
 - Courses objectives: Offering a solid introduction to students who seek principled and yet actionable understanding of algorithmic HCI.
- **ELEC-D7010 - Engineering for Humans**
 - Professor in charge: Pr. Antti Oulasvirta.
 - Audience: Bachelor students in Computer Science.
 - Courses objectives: Designing and engineering complex systems for human use.

2013–14 **Paris-Descartes University**, Paris, France.

- **History and Epistemology of Psychology**
 - Professor in charge: Pr. Françoise Parot.
 - Audience: Bachelor students in Psychology.
 - Course objectives: introduction to epistemology by a brief intellectual history of the psychological concepts from Descartes to the present day, including an introduction to ideas coming from Empiricism, Enlightenment and Romanticism, Lamarck's Transformism and Evolutionary Theory, Comte's Positivism and Freudian Psychoanalysis.
- **Supervised Individual Work**
 - Professor in charge: Pr. Noëlle Lidvan.
 - Audience: Bachelor students in Psychology.
 - Courses objectives: Learn how to conduct a literature review.

Thesis Supervision

- 2020 **Aini Putkonen**, Master's thesis (Aalto University, Finland): *Inverse modelling of players' attitudes towards risk in tactical turn-based games.*
- 2018 **Basile Garcia**, Master's thesis (University of Bordeaux, France): *Bounded rationality and spatial cognitive: Study of the role of information in a spatial competition model.*

Other working experiences

- 2011–12 **Intern**, HOSPITAL COCHIN. ADULT PSYCHIATRIC DEPARTMENT, Paris, France.
Cognitive behavioural therapies for adults in day-care.
- 2007–10 **Social Worker**, INSTITUT MÉDICO-ÉDUCATIF LES PETITES VICTOIRES, Paris, France.
Cognitive behavioural therapies for children with Pervasive Developmental Disorders (PDD).

Education

2014–18 **PhD, Cognitive Science**, SORBONNE UNIVERSITY, Paris, France.

- 2012–14 **MA, Cognitive Science**, ECOLE DES HAUTES ETUDES EN SCIENCES SOCIALES, ECOLE NORMALE SUPÉRIEURE, PARIS DESCARTES, Paris, France.
- 2010–12 **BA, Psychology**, UNIVERSITÉ PARIS DESCARTES, Paris, France.
- 2004–07 **BA, Musicology**, UNIVERSITÉ FRANÇOIS RABELAIS, Tours, France.

Languages

Natural languages: French, English.

Programming languages: Python, C#, HTML/CSS, SQL.

Publications

- 2023 Putkonen, A., Nioche, A., Laine, M., Kuuramo, C., & Oulasvirta, A. (2023). Fragmented visual attention in web browsing: weibull analysis of item visit times. *European Conference on Information Retrieval*, 62–78.
- Taylor, W., Nioche, A., Murray-Smith, R., Cooper, J., Abbasi, Q., & Imran, M. (2023). Contactless healthcare monitoring system performance analysis of multiple devices.
- 2022 Putkonen, A., Nioche, A., Tanskanen, V., Klami, A., & Oulasvirta, A. (2022). How suitable is your naturalistic dataset for theory-based user modeling? *Proceedings of the 30th ACM Conference on User Modeling, Adaptation and Personalization*, 179–190.
- 2021 de la Torre-Ortiz, C., & Nioche, A. (2021). [re] neural network model of memory retrieval. *ReScience C*.
- Nioche, A., Murena, P.-A., de la Torre-Ortiz, C., & Oulasvirta, A. (2021). Improving artificial teachers by considering how people learn and forget. *Proceedings of the 26th International Conference on Intelligent User Interfaces*.
- Nioche, A., Rougier, N. P., Deffains, M., Bourgeois-Gironde, S., Ballesta, S., & Boraud, T. (2021). The adaptive value of probability distortion and risk-seeking in macaques' decision-making. *Philosophical Transactions of the Royal Society B*, 376(1819), 20190668.
- Tanskanen, V., Rajani, C., Afrabandpey, H., Putkonen, A., Nioche, A., & Klami, A. (2021). Modeling risky choices in unknown environments. *Asian Conference on Machine Learning*, 1081–1096.
- 2020 Bourdenx, M., Nioche, A., Dovero, S., Arotcarena, M.-L., Camus, S., Porras, G., Thiolat, M.-L., Rougier, N. P., Prigent, A., Aubert, P., et al. (2020). Identification of distinct pathological signatures induced by patient-derived α -synuclein structures in nonhuman primates. *Science advances*, 6(20), eaaz9165.
- Brückner, L., & Nioche, A. (2020). [re] faster teaching via pomdp planning. *ReScience C*.
- 2019 Nioche, A., Bourgeois-Gironde, S., & Boraud, T. (2019). An asymmetry of treatment between lotteries involving gains and losses in rhesus monkeys. *Scientific reports*, 9(1), 1–13.
- Nioche, A., Garcia, B., Boraud, T., Rougier, N., & Bourgeois-Gironde, S. (2019). Interaction effects between consumer information and firms' decision rules in a duopoly: how cognitive features can impact market dynamics. *Palgrave Communications*, 5(1), 1–11.
- Nioche, A., Garcia, B., Lefebvre, G., Boraud, T., Rougier, N. P., & Bourgeois-Gironde, S. (2019). Coordination over a unique medium of exchange under information scarcity. *Palgrave Communications*, 5(1), 1–11.
- 2018 Lefebvre, G., Nioche, A., Bourgeois-Gironde, S., & Palminteri, S. (2018). Contrasting temporal difference and opportunity cost reinforcement learning in an empirical money-emergence paradigm. *Proceedings of the National Academy of Sciences*, 115(49), E11446–E11454.
- Nioche, A. (2018). Exercer son libre arbitre : un processus décisionnel. *Le libre arbitre : perspectives contemporaines*.
- Nioche, A., Egré, P., & Cova, F. (2018). Les attitudes réactives et le déterminisme: une étude expérimentale. *Le libre arbitre : perspectives contemporaines*.