



## Experience

2022– **Postdoctoral Researcher**, UNIVERSITY OF GLASGOW, Glasgow, UK.

Now Collaborating on a large-scale interdisciplinary project ([Quest - EP/T021020/1](#)) with different stakeholders, including clinicians from the NHS (British national health services), that aims to develop future health technologies for home that would help the user manage their health while respecting their privacy. My focus has been on:

- Developing an Active Inference-based algorithm for nudging the adherence to an exercise program
- Building a common embedding between multiple sensors to monitor the user's activities, using variational auto-encoders and constraining the structure of the latent space with specifically designed composite loss functions

2018–22 **Postdoctoral Researcher**, AALTO UNIVERSITY, Espoo, Finland.

Applying probabilistic machine learning to improve human-computer interactions, focusing on two main topics:

- Improving the personalisation of self-teaching applications; I modelled the situation as a Partially Observable Markov Decision Process and built a cognitive model taking into account individual- and material-specific characteristics, along with a planning technique that exploits this model to compare different practice schedules
- Evaluating the relevance a specific theory-driven model for a specific set of data by estimating the discrepancy between this model and the "true" generative model using transformed Gaussian processes

Teaching:

- Responsible for one Master's degree course; Intervention in two Bachelor's degree courses

Supervision:

- One master's thesis (cognitive science); Two summer interns (biology, engineering)

2014–18 **PhD Student**, SORBONNE UNIVERSITY, ECOLE NORMALE SUPÉRIEURE, UNIVERSITY OF BORDEAUX, Paris & Bordeaux, France.

Investigation of the cognitive foundations of economics, with an emphasis on:

- Evaluating if non-human primates display the same biases as humans when making risky decisions
- Finding the minimal amount of information required for an agreement on a unique medium of exchange through multi-agent simulations and serious games
- Evaluating the impact of knowledge accessible to consumers on the placement of firms in the market through multi-agent simulations and serious games

Supervision:

- One master's thesis (cognitive science); Two summer intern (engineering)

2013–14 **Intern (Master, 2<sup>nd</sup> year)**, PANTHÉON-SORBONNE UNIVERSITY, Paris, France.

Development of a multi-criterion decision-making model to go beyond the classical dilemma of incompatibility between the ability to predict human behaviour and exercising free will, by arguing that if we distinguish first-order choices between available actions and second-order choices between different representations/framing of the choice situation, then situating free-will in the second-order choices offers an interesting solution to this problem.

2012–13 **Intern (Master, 1<sup>st</sup> year)**, ECOLE NORMALE SUPÉRIEURE, UNIVERSITY OF GENEVA, Paris, France & Geneva, Switzerland.

Experimental testing of a philosophical argument that states that the attribution of moral responsibility can be better understood by looking at people's reactive attitudes, such as resentment, rather than metaphysical considerations. The experiment consisted of surveying participants who had been presented with different variants of a murderer's story.

2011–12 **Intern (Bachelor, 3<sup>rd</sup> year)**, COCHIN HOSPITAL. ADULT PSYCHIATRY DEPARTMENT, Paris, France. Cognitive-behavioral therapy (CBT) for adults in daycare.

2007–10 **Social Worker**, INSTITUT MÉDICO-ÉDUCATIF LES PETITES VICTOIRES, Paris, France. Cognitive-behavioral therapy (CBT) for children with autism and related developmental disorders.

## Education

- 2014–18 **PhD, Cognitive Science**, SORBONNE UNIVERSITY, Paris, France.
- 2012–14 **MSc, Cognitive Science**, ECOLE DES HAUTES ETUDES EN SCIENCES SOCIALES, ECOLE NORMALE SUPÉRIEURE, UNIV. PARIS DESCARTES, Paris, France.  
Multidisciplinary training in experimental psychology, neuroscience, computer science, decision theory/game theory, applied mathematics/statistics, and philosophy
- 2010–12 **BSc, Psychology**, UNIVERSITÉ PARIS DESCARTES, Paris, France.
- 2004–07 **BA, Musicology**, UNIVERSITÉ FRANÇOIS RABELAIS, Tours, France.

## Languages

### Natural languages:

- French (native)
- English (academic)

### Programming languages:

- Python:
  - Data analysis/ML Ops using Numpy, Matplotlib, PyTorch, Pandas
  - Backend development for web/phone apps using Django
- C#: Development of web/phone apps using Unity
- Java: Development of Android apps
- SQL: Backend development of phone/web apps (mostly Postgres)

## Skills

**Experimental design:** in the lab, online (Mechanical Turk or dedicated server), or *in situ* experiments via portable devices

**MLOps:** design and implementation (using PyTorch or plain Numpy) of machine learning models, cluster computing

**Software dev:** backend (using Python/Django) and frontend (using Unity) for mobile and web applications (e.g. self-teaching app, serious games); deployment of the backend on a dedicated server (using NGinx)

Please consult my [GitHub page](#) for concrete examples.

## Selected publications

- 2023 Nioche, A., Tanskanen, V., Marcelo, H., & Klami, A. (2023). Transformed gaussian processes for characterizing a model's discrepancy. *Asian Conference on Machine Learning*.
- 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 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.

Please consult my [Google Scholar page](#) for the complete list of my publications.