

# AURÉLIEN NIOCHE

he/his



## About me

As a postdoctoral researcher in **human-computer interaction** and **artificial intelligence**, I developed a strong foundation in **probabilistic machine learning** and, more generally, in **data modelling**, which I would like to use for a **more direct social impact**.

## Areas of specialization

Human-Computer Interaction • Machine Learning  
• Cognitive Science

## Skills

### MLOps

Design, implementation, eval. and deployment of machine learning models

### Exp. design

In premises or online (Mechanical Turk, web/mobile app)

### Software dev

Backend (using Python/Django) and frontend (Unity) for web/mobile apps; deployment on dedicated servers (Nginx)

### Cloud services

High performance computing (Slurm), microservices (AWS)

## Programming languages

### python

• Data analysis/ML (PyTorch, Scikit-learn) and data visualisation (Matplotlib, Seaborn)  
• Backend for web/mobile apps (Django)

### C#

Frontend for web/mobile apps using Unity

### java

Backend for Android apps

### SQL

Postgres databases (remote server for exp.)

## Natural languages

English  
French  
Japanese

C2 ••••  
C2 mother tongue  
A2 ••••

## Find me online

To contact me

[nioche.aurelien@gmail.com](mailto:nioche.aurelien@gmail.com)

For my personal website

[aureliennioche.github.io](https://github.com/aureliennioche)

For looking at code that I wrote

AurelienNioche

For taking a look at my publications

Aurélien Nioche

For my LinkedIn

Aurélien Nioche

## SHORT RESUMÉ

### Postdoctoral Researcher

UNIVERSITY OF GLASGOW · Glasgow 📍  
2022 · Now 📅

(HCI & ML) Collaborating on a large-scale interdisciplinary project (**Quest** - EP/T021020/1) including clinicians from the NHS (British national health services), that aims to develop future

home-use health technologies that 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

### Postdoctoral Researcher

AALTO UNIVERSITY · Espoo (Finland) 📍  
2018 · 22 📅

(HCI & ML) 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 & Supervision:

- Taught one Master's degree course; guest-lectured two Bachelor's degree courses
- Supervised one master's thesis (cognitive science) and two summer interns (biology, engineering)

### PhD Student

SORBONNE UNIV. & UNIV. OF BORDEAUX  
Paris & Bordeaux 📍  
2014 · 18 📅

(Cognitive science) 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) and two summer interns (engineering)

## DEGREES

2018 **PhD, Cognitive Science**  
2014 **Master, Cognitive Science**  
2012 **Bachelor, Psychology**  
2007 **Bachelor, Musicology**

SORBONNE UNIVERSITY 🏛️  
EHESS, ENS, PARIS-DESCARTES UNIV. 🏛️  
PARIS-DESCARTES UNIV. 🏛️  
UNIVERSITY OF TOURS 🏛️

## OTHER EXPERIENCES

### Intern (research)

UNIV. PANTHÉON-SORBONNE · Paris 📍  
2011 · 2012 📅

(Philosophy) Development of a hierarchical decision-making model to go beyond the apparent contradiction between the ability to predict and free will

### Intern (research)

ENS · Paris 📍  
2011 · 2012 📅

(Philosophy) Experimental eval. of the following statement: moral responsibility attribution can be better understood when considering people's reactions rather than their metaphysical views

### Intern (clinic)

COCHIN HOSPITAL. · Paris 📍  
2011 · 2012 📅

Adult Psychiatry Department. Cognitive-behavioral therapy (CBT) for adults in day-care

### Social Worker

IME LES PETITES VICTOIRES · Paris 📍  
2007 · 2010 📅

Cognitive-behavioral therapy (CBT) for children with autism and related developmental disorders