

Albert Buchard

MD, MSc

Geneva, Switzerland

[Website](#) • [GitHub](#)

[Google Scholar](#)

[LinkedIn](#)

CURRENT POSITIONS

Geneva University Hospitals

Chef de clinique; Clinical Research Scientist.

University of Geneva

Doctoral Researcher.

RESEARCH RECORD

Google Scholar 9 Aug 2026

1,151 citations; h-index 11; i10-index 13. Most-cited clinical machine-learning review: 698 citations.

SELECTED DISTINCTIONS

Ecole de l'INSERM 2007

National selection; two-year physician-scientist master's scholarship.

MSc Neurosciences 2009–2011

Magna cum laude; second of 60; research at the Ecole normale supérieure and Brain and Spine Institute.

Swiss National Science Foundation 2015

MD-PhD scholarship: CHF 180,000 over three years.

Comprehensive curriculum vitae

Physician, psychiatrist, and machine-learning research scientist

I began programming at nine and later trained in medicine and neuroscience through nationally selective physician-scientist programmes. My career brings together clinical responsibility, original research, and the software required to test and apply new methods. I now practise as a senior hospital psychiatrist, conduct causal machine-learning research in psychiatry, and complete a doctorate on the validity of deep sequence models. Earlier, I led artificial-intelligence research for drug repurposing at [RE]MEDs Research and worked as a Research Scientist at Babylon Health and a Machine Learning Researcher at BIOS Health.

— Current clinical and research work

Chef de clinique (senior hospital physician)

Nov 2023–present

[Geneva University Hospitals, Department of Psychiatry](#)

Geneva, Switzerland

- Provide senior psychiatric care in the psychogeriatric crisis programme from 2025.
- From 2023 to 2025, conducted psychedelic-assisted-psychotherapy research on Schema Therapy constructs and processes; also conduct computational-psychiatry research.

Clinical Research Scientist

Nov 2021–present

[Geneva University Hospitals](#)

Geneva, Switzerland

- Develop causal deep-learning methods for multimodal sequential modelling in psychiatry.
- Led the 2021–2022 development of a digital mental-health research platform using React Native, React, Node.js, Python, and R; contribute to outcomes, safety, biomarker, and implementation research in psychedelic-assisted psychotherapy.

Doctoral Researcher, Machine Learning and Computational Psychiatry

Nov 2022–present

[University of Geneva, Faculty of Medicine](#)

Geneva, Switzerland

- Study when deep sequential models recover underlying generative signal and when they exploit confounding, selection, or nuisance information.
- Develop forward, backward, autoregressive, and masked Transformer models; structural causal simulations; attribution analyses; causal corrections; and known-truth evaluations for task-based functional magnetic-resonance imaging.
- Dissertation: *From Prediction to Causal Inference in Modern Deep Sequential Task-fMRI Models*; expected in 2026 under Professor Stefan Kaiser.

— Research leadership, machine learning, and software

Lead Artificial Intelligence Scientist

[RE]MEDs Research

Nov 2021–Nov 2025

Paris, France / remote

- Led research and development of a hybrid large-language-model and graph-knowledge framework for drug repurposing and therapeutic-hypothesis generation.
- Released production software including an interactive metamodel editor, automated clinical-data ingestion pipelines, and a free-text interface to a biomedical knowledge base.
- Built language-model agent systems for knowledge-base enrichment, automated literature review, mechanism-of-action discovery, and conflict detection and resolution across heterogeneous biomedical sources.
- Developed simulation-driven validation for epidemiological causal methods and contributed to a high-throughput target-trial-emulation platform for in-silico drug-repurposing studies.
- Designed graph-based causal machine-learning methods and implemented services and interfaces in Python, React, and Node.js.
- Held the appointment part time alongside clinical and doctoral work; a 25 percent workload was documented in April 2023.

Machine Learning Consultant

[RE]MEDs Research

Jul 2021–Nov 2021

Paris, France / remote

- Worked part time on causal analysis, biomedical knowledge representation, and the technical foundations of the subsequent research platform.

Machine Learning Researcher

BIOS Health

May 2020–Nov 2020

Cambridge, United Kingdom

- Analysed peripheral-nerve recordings and physiological time series and developed sequence-to-sequence models for automated neural-signal biomarker discovery.
- Applied Bayesian optimisation and reinforcement learning to nerve-stimulation research.
- Contributed Swift, Python, and C++ software for data collection, analysis, and cardiological monitoring.

Research Scientist

Babylon Health

Apr 2018–May 2020

London, United Kingdom

- Led deep-reinforcement-learning research and developed Bayesian methods for automated medical triage and active diagnosis, including models that improved internal production baselines.
- Built scalable training environments with Unity ML-Agents and Kubernetes and a Unity medical-clinic simulator for reinforcement-learning research.
- Improved policy computation by approximately fourfold, improved the clinical coherence of question sequences, and developed a model-based stopping criterion; these were internal research results.
- Developed automated sensitivity analysis for epidemiological models and coarse-grained probabilistic graphical models for diagnostic information.
- Built a cross-platform C++ inference prototype for Linux and iOS that produced an internal tenfold speed improvement.
- Researched product safety using logical and machine-learning systems, simulated environments, probabilistic inference, and validation of clinician-authored rules.
- Published first-author work and contributed to three patent families, one of which became a granted United States patent.

Data Science Intern

Babylon Health

Dec 2017–Feb 2018

London, United Kingdom

- Owned a project spanning the probabilistic graphical-modelling and data-semantics teams; developed Scala tools to discover and refine first-order medical triage rules in semi-structured knowledge graphs and map medical concepts across services.
- Built a Node.js and React validation application for clinician experts, with service application-programming interfaces and Protocol Buffers serialization.

Visiting Researcher

University of California, Los Angeles, Semel Institute

Nov 2017–Dec 2017

Los Angeles, United States

Contributed to an online clinical tool for identifying psychogenic non-epileptic seizures under the supervision of Professor Mark S. Cohen.

Machine Learning Consultant

Stalicia

Oct 2017–Nov 2017

Geneva, Switzerland

Designed the architecture of an integrated pipeline for biomedical knowledge creation, data management, and drug discovery.

Lead Full-Stack Developer

Open Influence

Jul 2013–Nov 2013

Paris, France / Los Angeles, United States

- Built a custom operational and analytical customer-relationship-management system in three months.
- Built an automated scheduling algorithm and large-scale Instagram data-mining tools in PHP and JavaScript.

— Clinical experience

Psychiatry Resident

Geneva University Hospitals

Nov 2020–Nov 2023

Geneva, Switzerland

- Held the appointment at 50 percent.
- Worked at the Servette community psychiatry outpatient centre, in the consultation programme from 2020 to 2022 and the crisis programme from 2022 to 2023.
- Managed longitudinal outpatient care for approximately 100 adults with complex psychiatric conditions in monthly follow-up.

Psychiatry Resident

Geneva University Hospitals

Jul 2014–Oct 2015

Geneva, Switzerland

- Managed ambulatory emergencies and longitudinal care in the geriatric ambulatory unit.
- Worked in a short-stay adult psychiatry unit specialising in crisis management and complex migration-related presentations.

Neurosurgery Resident

Grenoble University Hospital

Nov 2013–May 2014

Grenoble, France

Coordinated inpatient care, evaluated emergency referrals, provided specialist tele-assessments, supervised medical students, and assisted with emergency, deep-brain-stimulation, epilepsy, oncological, and paediatric neurosurgery.

Medical clerkships

Sorbonne University hospitals

Sep 2006–Jun 2013

Paris, France

Rotations in neurology and neurological intensive care at Pitie-Salpetriere; cardiology and adult psychiatry at Saint-Antoine; paediatric neurology at Armand-Trousseau; general surgery at Pitie-Salpetriere; gynaecology and nephrology at Tenon; internal medicine at Pitie-Salpetriere; rheumatology at Saint-Antoine; and infectious and tropical diseases at Pitie-Salpetriere.

— Education and research training

Doctorate in Medicine (Dr. med.), in progress

University of Geneva

Machine learning and computational psychiatry.

Nov 2022–expected 2026

Geneva, Switzerland

Medical Degree, Medicine, MD-PhD track Sorbonne University French medical degree; Swiss federal recognition obtained in 2014.	2006–2013 Paris, France
Ecole de l'INSERM Fellow and Master's Scholar Ecole de l'INSERM physician-scientist programme Selected through France's national competitive medicine-science programme, which trains medical students to lead clinical or fundamental research, and awarded a two-year master's scholarship.	Selected 2007 Paris, France
Master's Degree, Neurobiology and Neurosciences Sorbonne University Magna cum laude; ranked second among 60 students in final examinations.	2009–2011 Paris, France
Master's Research Placement, Neurosciences Institut de biologie de l'Ecole normale superieure Studied serotonergic modulation of cerebellar Golgi cells in mice and rats using patch-clamp electrophysiology, two-photon imaging, and immunohistology. Supervisor: Stephane Dieudonne.	Within 2009–2011 MSc Paris, France
Master's Research Placement, Brain-Computer Interfaces Brain and Spine Institute Developed an electroencephalography-based brain-computer interface for real-time mental-state classification, signal preprocessing, and multiclass support-vector-machine classification in MATLAB; approximately 80 percent same-day accuracy. Supervisor: Jacques Martinerie.	Within 2009–2011 MSc Paris, France
MD-PhD Candidate in Cognitive Neuroscience; programme not completed Bavelier Laboratory, University of Geneva Studied hierarchical statistical learning, compositional knowledge, reinforcement learning, behaviour, and neuroimaging under Professor Daphne Bavelier. Swiss National Science Foundation MD-PhD fellow through the Lemanic Neuroscience Doctoral School.	Nov 2015–Jul 2018 Geneva, Switzerland

— Software, open source, and independent products

Forge Creator and principal maintainer of a local-first structured memory and planning system for humans and artificial-intelligence agents. The TypeScript, React, Fastify, SQLite, Tauri, Swift, and Rust project includes device synchronisation, provenance, personal health and movement data imports, training-load and recovery views, and coding-agent integrations. Apache-2.0 licence. github.com/albertbuchard/forge	Public repository
CausalPipe Creator of a Python package for structured causal discovery with graph discovery, statistical testing, model comparison, and reproducible reporting. Published on the Python Package Index under the MIT licence. github.com/albertbuchard/causal-pipe	Public package and repository
CausalBOLD Doctoral work on large-scale known-truth evaluation of deep sequential models using simulated and task-based functional magnetic-resonance imaging. The work combines causal simulations, Transformer-family models, attribution analyses, controlled confounding and selection-bias tests, and high-performance-computing experiments. A public software or data release has not been verified.	Research output · in press

PyTorch distributed training and SLURM boilerplate

Public repository

Reusable infrastructure for PyTorch distributed data-parallel training on SLURM high-performance-computing clusters, with experiment tracking and reproducible launch configuration.

github.com/albertbuchard/slurm-pytorch-ddp-boilerplate

GraphModelParser

Public repository

Python parser and simulator for dynamic graph-based models, supporting validation and evaluation of structured model definitions.

github.com/albertbuchard/GraphModelParser

QuotiDoc

Public educational product

Independent medical-education product delivering daily clinical questions and structured synthesis sheets in French, English, and German. It is an education product, not a validated clinical decision system.

quotidoc.com

QuotiPsy

Public educational product

Independent psychiatry-education product with daily exercises and structured psychotherapy and psychopharmacology summaries in French, English, and German.

quotipsy.com

Therapy Deliberate Practice Studio

Public psychotherapy-training system

Creator of an independent platform for deliberate practice of psychotherapy communication skills. The system includes React and TypeScript learner and administration interfaces, a Cloudflare service, a local Python inference gateway, and a Tauri and Rust desktop application. Local speech and language processing and a loopback-only gateway support a privacy-preserving workflow. It is training software; no claim is made for treatment efficacy, diagnostic validity, clinical validation, or clinical deployment.

therapy-deliberate-practice.com • [GitHub](#)

PyRetest

Public Python package

Library for test-retest reliability analysis and simulation-based estimation of adequate sample size.

[Python Package Index](#)

Experiment.js and Calibrator.js

Public repositories

JavaScript tools for cross-platform two-dimensional and three-dimensional behavioural experiments, online participant workflows, and browser-based screen calibration.

[Experiment.js](#) • [Calibrator.js](#)

Additional public packages and earlier projects

Public software

Earlier work includes Python packages for causal bootstrap and structure learning, non-parametric entropy estimation, graph-model parsing, and test-retest analysis, plus StockHawk, an Android training project.

[StockHawk](#)

— Peer-reviewed publications

Real-world effectiveness and safety of psychedelic-assisted psychotherapy: outcomes from a large-scale compassionate-use cohort in Switzerland. Aboulafia-Brakha T, Buchard A, et al. *Psychiatry Research*. 2026;358:116992.

[doi:10.1016/j.psychres.2026.116992](https://doi.org/10.1016/j.psychres.2026.116992)

Psychothérapie assistée par psychédéliques: enjeux et contenu des séances de préparation. Briefer J-F, Seragnoli F, Thorens G, et al., including Buchard A. *Annales Médico-Psychologiques*. Published online 2026.

[doi:10.1016/j.amp.2026.03.020](https://doi.org/10.1016/j.amp.2026.03.020)

Effects of LSD and psilocybin on heart rate in patients receiving psychedelic treatment for depressive and anxiety disorders: a retrospective observational study. Szczesniak L, et al., including **Buchard A**. *Psychology International*. 2026;8(1):1; published online 2025.

[doi:10.3390/psycholint8010001](https://doi.org/10.3390/psycholint8010001)

Psilocybin-assisted psychotherapy for chronic somatoform pain disorder: a case report. Mercier M, Mabilais C, Chytas V, Furtado L, Seragnoli F, **Buchard A**, et al. *Psychoactives*. 2025;4(3):30.

[doi:10.3390/psychoactives4030030](https://doi.org/10.3390/psychoactives4030030)

Pilot data on salivary oxytocin as a biomarker of LSD response in patients with major depressive disorder. Cazorla L, Alaux S, Amberger C, Mabilais C, Furtado L, **Buchard A**, et al. *Psychoactives*. 2025;4(3):26.

[doi:10.3390/psychoactives4030026](https://doi.org/10.3390/psychoactives4030026)

Metacognitive feelings of epistemic gain are central to the understanding of psychedelic-induced mystical-type experiences. Seragnoli F, et al., including **Buchard A**. *Cognitive Therapy and Research*. 2025.

[doi:10.1007/s10608-025-10588-z](https://doi.org/10.1007/s10608-025-10588-z)

Hydroxychloroquine and cardiovascular events in patients with systemic lupus erythematosus. Grimaldi L, Duchemin T, Hamon Y, **Buchard A**, Benichou J, Abenham L, Costedoat-Chalumeau N, Moride Y. *JAMA Network Open*. 2024;7:e2432190.

[doi:10.1001/jamanetworkopen.2024.32190](https://doi.org/10.1001/jamanetworkopen.2024.32190)

Psychothérapie assistée par psychédéliques: le modèle genevois. Seragnoli F, Thorens G, Penzenstadler L, Furtado L, **Buchard A**, et al. *Annales Médico-Psychologiques*. 2024;182(9):806–813.

[doi:10.1016/j.amp.2024.05.014](https://doi.org/10.1016/j.amp.2024.05.014)

Psychédéliques: entre usage thérapeutique et usage récréatif. Seragnoli F, Thorens G, Penzenstadler L, **Buchard A**, et al. *Bulletin des Médecins Suisses*. 2024.

archive-ouverte.unige.ch/unige:179116

Vaccines and the risk of hospitalization for multiple sclerosis flare-ups. Grimaldi L, Papeix C, Hamon Y, **Buchard A**, Moride Y, Benichou J, Duchemin T, Abenham L. *JAMA Neurology*. 2023;80(10):1098–1104.

[doi:10.1001/jamaneurol.2023.2968](https://doi.org/10.1001/jamaneurol.2023.2968)

Long-term impact of COVID-19 among maintenance haemodialysis patients. Chawki S, **Buchard A**, Sakhi H, et al. *Clinical Kidney Journal*. 2022;15(2):262–268.

[doi:10.1093/ckj/sfab166](https://doi.org/10.1093/ckj/sfab166)

Media use, attention, mental health and academic performance among 8- to 12-year-old children. Cardoso-Leite P, **Buchard A**, Tissieres I, Mussack D, Bavelier D. *PLOS ONE*. 2021;16(11):e0259163.

[doi:10.1371/journal.pone.0259163](https://doi.org/10.1371/journal.pone.0259163)

Treatment impact on COVID-19 evolution in hemodialysis patients. Chawki S, **Buchard A**, Sakhi H, et al. *Kidney International*. 2020;98(4):1053–1054.

[doi:10.1016/j.kint.2020.07.010](https://doi.org/10.1016/j.kint.2020.07.010)

Machine learning for clinical decision support in infectious diseases: a narrative review of current applications. Peiffer-Smadja N, Rawson TM, Ahmad R, **Buchard A**, Pantelis G, Lescure F-X, Birgand G, Holmes AH. *Clinical Microbiology and Infection*. 2020;26(5):584–595.

[doi:10.1016/j.cmi.2019.09.009](https://doi.org/10.1016/j.cmi.2019.09.009)

Reliability of reported peri-ictal behavior to identify psychogenic nonepileptic seizures. Kerr WT, Chau AM, Janio EA, et al., including **Buchard A**. *Seizure*. 2019;67:45–51.

[doi:10.1016/j.seizure.2019.02.021](https://doi.org/10.1016/j.seizure.2019.02.021)

An objective score to identify psychogenic seizures based on age of onset and history. Kerr WT, Janio EA, Braesch CT, et al., including **Buchard A**. *Epilepsy & Behavior*. 2018;80:75–83.

[doi:10.1016/j.yebeh.2017.11.035](https://doi.org/10.1016/j.yebeh.2017.11.035)

Identifying psychogenic seizures through comorbidities and medication history. Kerr WT, Janio EA, Braesch CT, et al., including **Buchard A**. *Epilepsia*. 2017;58(11):1852–1860.

[doi:10.1111/epi.13888](https://doi.org/10.1111/epi.13888)

— Preprints, technical research, and theses

Validation of a high-throughput target-trial-emulation platform for drug repurposing in systemic lupus. Moride Y, Hamon Y, Benichou J, **Buchard A**, Grimaldi L, Abenheim L. Research Square, 2026.

[doi:10.21203/rs.3.rs-8790368/v1](https://doi.org/10.21203/rs.3.rs-8790368/v1)

Limited prognostic value of early maladaptive schemas for acute psychedelic experience and symptom improvement. **Buchard A**, Seragnoli F, Sabe M, et al. Research Square, 2025. First author.

[doi:10.21203/rs.3.rs-8214817/v1](https://doi.org/10.21203/rs.3.rs-8214817/v1)

Learning medical triage from clinicians using deep Q-learning. **Buchard A**, Bouvier B, Prando G, Beard R, Livieratos M, Busbridge D, et al. arXiv, 2020. First author.

[arXiv:2003.12828](https://arxiv.org/abs/2003.12828)

Universal marginaliser for deep amortised inference for probabilistic programs. Walecki R, Gourgoulas K, Baker A, Hart C, Lucas C, Zwiessele M, **Buchard A**, et al. arXiv, 2019; earlier version published in 2018.

[arXiv:1910.07474](https://arxiv.org/abs/1910.07474)

Two deep neural-network architectures to find roads in satellite images: convolutional versus fully convolutional semantic segmentation. **Buchard A**, Joseph R. Technical report, 2016.

[doi:10.13140/RG.2.2.36205.64488](https://doi.org/10.13140/RG.2.2.36205.64488)

Serotonergic modulation of cerebellar Golgi cells in mice. **Buchard A**. Master's thesis, Sorbonne University and Ecole normale supérieure, 2010.

[doi:10.13140/RG.2.1.4241.0646](https://doi.org/10.13140/RG.2.1.4241.0646)

— Book chapters, conference papers, and abstracts

Artificial intelligence for medical diagnosis. Richens JG, **Buchard A**. In *Artificial Intelligence in Medicine*. Springer, 2022; pp. 181–201.

doi.org/10.1007/978-3-030-64573-1_29

Artificial intelligence for medical decisions. **Buchard A**, Richens JG. In *Artificial Intelligence in Medicine*. Springer, 2022; pp. 159–179. First author.

doi.org/10.1007/978-3-030-64573-1_28

Impact à long terme du COVID-19 chez les patients dialysés. Sakhi H, Chawki S, **Buchard A**, et al. *Néphrologie & Thérapeutique*. 2021;17(5):269–270.

Conference abstract

COVID-19 chez les patients dialysés, expérience multicentrique en Ile-de-France. Chawki S, **Buchard A**, et al. *Néphrologie & Thérapeutique*. 2020;16(5):271.

Conference abstract

Tuning semantic consistency of active medical diagnosis: a walk on the semantic simplex. **Buchard A**, Gourgoulas K, Navarro AKW, Zwiessele M, Perov Y, Baker A, Johri S. Frontier of Artificial Intelligence-Assisted Care Scientific Symposium, 2019.

Best poster and panel contribution

Reliability of patient-reported peri-ictal behavior to identify psychogenic nonepileptic seizures. Kerr W, et al., including **Buchard A**. *Neurology*. 2018;90(15 Supplement).

Conference abstract

Learning statistical regularities in 8- to 12-year-old children is associated with sustained attention and video-game use. Buchard A, Tissiere I, Cardoso-Leite P, Bavelier D. Alpine Brain Imaging Meeting, 2017.

[Conference abstract](#)

Structural learning: a promising concept to grasp individual differences relevant to real-life outcomes. Buchard A, Cardoso-Leite P, Tissiere I, Schrater P, Bavelier D. Second Jean Piaget Conference, 2016.

[Conference presentation](#)

An electroencephalography brain-computer interface to classify motor imagery. Buchard A, Laurent F, Martinerie J. Journées Scientifiques de l'Ecole de l'INSERM, 2009.

[Conference presentation](#)

— Patents

Dialogue flow using semantic simplexes. Buchard AJT, Gourgoulis K, Zwiessele MB, Navarro AKW, Johri S. United States Patent 11,145,414, granted 12 October 2021. **Granted and active.**

patents.google.com/patent/US11145414B2/en

System and method for medical triage through deep Q-learning. Buchard A, Bouvier B, Livieratos M, Beard R, Gourgoulis K, Johri S, Prando G. United States application 16/849,162. **Published application; abandoned.**

patents.google.com/patent/US20210327578A1/en

Computer-implemented method and system for running inference queries with a generative model. Walecki R, Buchard A, Gourgoulis K, Hart C, Lomeli M, Baker A, Navarro AKW, Zwiessele M, Perov Y, Johri S. United States application 16/594,957. **Published application; abandoned.**

patents.google.com/patent/US20210103807A1/en

— Distinctions, grants, and additional training

Swiss National Science Foundation MD-PhD scholarship	2015
CHF 180,000 over three years.	

Best poster and invited panelist, Frontier of Artificial Intelligence-Assisted Care Scientific Symposium	2019
Stanford, United States.	

Best team project, tied, CoSMo Summer School	2017
Minneapolis, United States.	

Ecole de l'INSERM fellow and two-year master's scholarship	2007
Selected through France's national competitive medicine-science programme, designed to prepare physicians to participate in and later lead clinical or fundamental research.	

Artificial Intelligence Nanodegree	2018
Udacity.	

Probabilistic Graphical Models Specialization	2018
Stanford University through Coursera.	

Google Android Certification Preparation / Android FastTrack	2017
Udacity training that included the StockHawk Android project.	

— Teaching

Schema Therapy for Personality Disorders

May 2026

4.5 hours.

Psychiatry Through Film: Clinical Perspectives on Mental Illness

2025

2 hours.

Artificial Intelligence and Medicine

2022

Two-hour teaching unit for approximately 50 students in the New Methods in Microbiology course at Sorbonne University.

Statistical Analysis and Machine Learning with R

2017

Designed, organised, and taught approximately 40 hours across 20 graduate-level sessions for seven students at Campus Biotech, Geneva.

Cognitive Artificial Intelligence Meetings

2017–2018

Founded and organised approximately 20 hours of journal-club meetings, courses, and reading sessions at Campus Biotech.

— Research supervision

Supervised or co-supervised seven students across computer science, machine learning, medicine and data science, and psychology:

- Baptiste Bouvier, Massachusetts Institute of Technology, Bachelor of Science in Computer Science, 2019.
- Daniel Raff, University of British Columbia, medicine and data science, 2019.
- Michail Livieratos, University College London, machine learning, co-supervision, 2019.
- Sybille de Saussure, Melissa Adhiambo, Maria-Paz Gimenez, and Zoe-Mathilde Franchetti, University of Geneva, Master of Science in Psychology, co-supervision, 2017.

— Methods, technologies, and languages

Research methods Causal inference; target-trial emulation; structural causal models; causal discovery; deep sequential models; Transformers; reinforcement learning; Bayesian modelling; probabilistic graphical models; amortised inference; uncertainty and sensitivity analysis; model attribution and interpretability; known-truth simulation; longitudinal and time-to-event analysis; clinical validation; functional magnetic-resonance imaging; electroencephalography; physiological and peripheral-nerve signal analysis.

Programming and engineering Python, R, TypeScript, JavaScript, Node.js, React, React Native, Scala, Swift, C++, C, C#, Unity, PHP, Java, Docker, Kubernetes, SLURM, distributed PyTorch, SQLite, Fastify, Tauri, Rust, Git, and scientific high-performance computing.

Professional languages French and English.