NEUROSCIENCES

NEUROGRAD+ SUMMER SCHOOL

Web-based technologies for cognitive science

For last-year bachelor and master students

6th - 9th July 2026

Lyon, France

More info: neurograduate.univ-lyon1.fr/summerschool/

Robust Circuit

Day 1 – 6th of July 2026

Open cognitive science & online behavioural testing

- *08h30-09h00* | Registration and coffee break

- *09h00-09h15* | Welcoming words by the organizers and general introduction
- *09h15-11h45* | **Lectures**. **Introduction to open cognitive science**.

  09h15- 09h45 | What lies ahead: the long road from ideas to publication | ***Nils Kolling, SBRI, Lyon***

  09h45-10h15 | Experimental designs in the lab and on the web | ***Romain Ligneul, CRNL, Lyon***

  10h15-10h30 | Break

  10h30-11h15 | Opening science | ***Gaelle Leroux, CRNL, Lyon***

- *11h30-12h15* | Flash-talks by participants

- *12h15-14h00* | Lunch with speakers

- *14h00-18h00* | **Practical session**. **Deploying behavioural experiment**
  - Essential Git commands for version control
  - Virtual environments for Python and Javascript
  - Key principles and implementation of web programming using HTML and Javascript
  - Setting up a web-server to serve a behavioural task using jsPsych and Express.js

Day 2 - 7th of July 2026

Doing more with more data

- *09h30-11h45* | **Lectures**. **Large scale online experiments & ecological contexts**

  09h30-10h00 | Gamifying experiments for emotional engagement | ***Jacqueline Scholl, CRNL, Lyon***

  10h00-10h30 | Turning an experiment into an game for smartphone | ***Quendera, CCU, Lisbon***

  10h30-10h45 | Break

  10h45-11h15 | Studying cognition in ecological settings | ***Valerie Godefroy, CRNL, Lyon***

- *11h30-12h15* | Flash-talks by participants

- *12h15-14h00* | Lunch with speakers

- *14h00-18h00* | **Practical session**. **Accessing, preprocessing and analysing online data**
  - Getting familiar with Numpy and Pandas
  - Preprocessing and sanity checks
  - Plotting data with Seaborn
  - Frequentist statistics using Pingouin

- *19h00* | Social event with students and speakers near the River Rhône.

Day 3 - 8th of July 2026

Emerging approaches for clinical applications

- *09h30-11h45* | **Lectures.** **Introduction to computational psychiatry**

  09h30-10h00 |General principles of computational psychiatry | ***Sami Beaumont, Saint-Anne, Paris***

  10h00-10h30 | From associative learning to reinforcement learning | ***Philippe Domenech, Saint-Anne, Paris***

  10h30-10h45 | Break

  10h45-11h15 | What are metacognitive abilities and how are they relevant for psychiatry? | ***Michael Pereira, Grenoble Institut des Neurosciences***

- *11h30-12h15* | Flash-talks by local students

- *12h15-14h00* | Lunch with speakers

- *14h00-15h30* | **Lectures**. **Virtual Reality (VR) & BCI for cognitive science**

  14h00-14h30 | Insights into cognitive processes using BCI | ***Jérémie Mattout, CRNL, Lyon***

  14h30-15h00 | VR to study and act on cognition | ***Victoria Brugada, Altoida, Basel***

- *15h00-15h30* | **Wrapping up**
  - How to make the most out of the material used throughout the school

- *15h30-17h00* | **Neuro-immersion (VR) platform visit** at Impact | ***Clément Désoches, CRNL, Lyon***

- *20h30* | **Art-science event** | ***Infusions Collective***

Day 4 - 9th of July 2026 (bonus day)

Computational behavioural modeling

- *09h30-11h45* | **Lectures**. **Computational models of behaviour**
- *09h30-10h00* | Key principles for behavioural modelling | ***Romain Ligneul, CRNL, Lyon***
- *10h00-10h30* | Bayesian models | ***Matteus Joffily, GATE, Lyon***
- *10h30-10h45* | **Break**
- *10h45-11h15* | Reinforcement models | ***Sophie Bavard, Paris Brain Institute, Paris***

- *11h30-12h15* | Flash-talks by local students

- *12h15-14h00* | Lunch with speakers and local students

- *14h00-18h00*. **Practical session**. **Fitting and validating behavioural models**
    - Simulating the task using different reinforcement-learning models
    - Model fitting & model validation
    - Making sense of model comparisons

Meet the speakers

Clément Désoche

Clément Desoche is an engineer at the Neuro-Immersion virtual reality (VR) platform at the CRNL. His work is focused on the multi-sensory modalities of virtual reality: from non-human models such as rodent and non-human primates to healthy participants and patients, as well as synchronized harvesting of behavioural responses such as motion tracking, eye-tracking, EEG, EMG, among others. Clément has experience on advancing VR projects from A to Z.

Gaëlle Leroux

Gaëlle Leroux has her PhD in neuroscience from the University of Caen-Normandy and a postdoc from Karolinska Institutet, in Sweden. During this time she applied neuroimaging tools to better understand the neural basis for cognitive development during childhood. Besides children, she has also experience with ADHD and healthy adults in a diverse range of techniques such as fMRI, MEG, EEG, fNIRS and cognitive testing. Currently, she is working at the CRNL as a research engineer in biological data analysis and an advocate for open science!

Jacqueline Scholl

During her PhD at Oxford University in the United Kingdom, Jacqueline Scholl investigated the neural and pharmacological mechanisms of learning and decision-making using functional MRI, MRI spectroscopy and drug manipulations. After a MRCS and a BBSRC fellowships, she joined the CRNS at Lyon as a tenured researcher. She has experience with imaging techniques such as fMRI and MEG as well as computational modelling, being part of clinical studies involving patients, drugs and psychological interventions such as mindfulness. More recently, Jacqueline has been focusing on the integration of emotional components in rational models of decision making.

Jérémie Mattout

Jérémie Mattout is an engineer by training and holds a PhD in cognitive neuroscience from the University of Paris 6. He is an INSERM research fellow in the DYCOG team at the Lyon Neuroscience Research Centre. His research focuses on the fundamental and clinical applications of human electrophysiology, modelling, and brain-machine interfaces. He is particularly interested in deficits in perception, learning and attention in altered states of consciousness, autism and ADHD.

Mateus Joffily

Mateus Joffily is a CNRS research engineer with a PhD in Biophysics from the Federal University of Rio de Janeiro and a degree in Biomedical Engineering. Currently based at the Groupe d'Analyse et de Théorie Économique (GATE) in Lyon, he manages the physiological measurement unit of the GATELAB. His work bridges neuroscience and behavioral economics, focusing on computational models of decision-making and emotion, as well as behavioral and physiological data analysis from human experiments.

Michael Pereira

Michael obtained a Ph.D. from École Polytechnique Fédérale de Lausanne (EPFL) on the neural bases of error monitoring and metacognition. He did a first postdoc at EPFL to study perceptual consciousness, then joined the Laboratoire de Psychologie et Neurocognition in Grenoble for a second postdoc funded by the Swiss National Science Foundation. He is now a scientist at the National Institute of Health and Medical Research (INSERM) at the Grenoble Institut des Neurosciences (GIN). He studies the mechanisms underlying perceptual consciousness and metacognition using invasive recordings in humans and computational modeling and translational work with patients experiencing hallucinations or with obsessive-compulsive disorder.

Nils Kolling

Nils Kolling obtained his PhD in neuroscience from the department of experimental psychology at Oxford, followed by a research position. There, he used different techniques for analysing brain activity with the goal of deciphering the neural mechanisms of decision-making. Currently, he leads the Ecological Cognition and Neurocomputation lab at the Stem-cell and Brain Research Institute (SBRI) at Lyon. His lab focuses on understanding decision-making processes over time by combining human brain imaging and behavioural data.

Philippe Domenech

Philippe Domenech is a psychiatrist and a neuroscientist who did his PhD in neuroscience in the Reward and Decision Making team of Institut des Sciences Cognitives Marc Jeannerod. Next, he joined the team of Etienne Koechlin at the École Normale Supérieure to pursue his work on the neural and computational mechanisms underlying adaptive and flexible behavior in changing and uncertain environments. He is now professor at Paris-Cité and director of the Neuromodulation Institute of GHU Paris.

Quendera

Quendera studied clinical psychology and transitioned into the field of computational neuroscience for their PhD at the System Neurosciences Lab at the Champalimaud, the Center from the Unknown (CCU) in Lisbon, Portugal. The PhD focused on cognitive flexibility and Bayesian inference in patients and healthy participants. Now combines the two fields - clinical psychology and computational neuroscience - to explore how humans make complex decisions in video-game based tasks.

Romain Ligneul

Romain Ligneul did his PhD in the Neuroeconomics team of Institut des Sciences Cognitives Marc Jeannerod. After a postdoc in the Netherlands and Portugal, he came back to Lyon as a researcher to study the primary computational functions of serotonin signaling in the mammalian brain, using a mix of computational, systems, and cognitive neuroscience methods. He has a keen interest in causal inference models and explores their implications for learning, decision-making, and executive control in both mice and humans.

Sami Beaumont

Sami Beaumont is a psychiatrist and researcher, currently working in the University Hospital department of Sainte Anne Hospital in Paris. He obtained his PhD in cognitive neuroscience under the co-supervision of Philippe Domenech and Mehdi Khamassi (ISIR), on adaptive behavior in uncertain and changing environments. He is mainly interested in inference processes under uncertainty in healthy subjects as well as in patients with psychiatric pathologies. His approach combines experimental psychology, computational modeling and Bayesian statistics.

Sophie Bavard

Sophie Bavard is a postdoctoral researcher at the Motivation, Brain and Behavior Lab at the Paris Brain Institute (Paris, France). With a background spanning mathematics, cellular neuroscience, and computational cognitive neuroscience, she is interested in how humans learn and make value-based decisions, with a particular focus on metacognition and mentalizing. To do so, Sophie develops computational models that capture how people reflect on their own decisions and infer the minds of others.

Valerie Godefroy

Valerie Godefroy investigates how fundamental temperamental traits shape the way individuals adapt to their environment. She examines how apathy (lack of motivation), impulsivity, and inhibitory deficits influence behavior across domains, particularly in real-life ecological contexts, and how these traits can be predicted using brain imaging (MRI). Recently she was appointed junior professor at the University of Burgundy, she collaborates with the Center for Taste and Feeding Behavior to explore how these individual differences drive responses to our olfactory and food environment. Her work aims to identify reliable behavioral and neural markers that improve our understanding of adaptive functioning and vulnerability across populations.

Victoria Brugada

Victoria Brugada-Ramentol is a Human Biology graduate specializing in neuroscience and the use of immersive technologies in health. Her work focuses on how virtual and augmented reality can transform the early detection of cognitive decline, combining scientific insight with innovative technological approaches.

After beginning her career in academia studying self-representation in humans through virtual reality, she transitioned into applied healthtech, where she leverages data to develop more effective and scalable diagnostic tools. She is currently a Clinical Data Lead at Altoida, working at the intersection of clinical device development, data science, and product innovation.

With a multidisciplinary background spanning research, design, and data curation, Victoria brings a holistic perspective to digital health. As an avid public speaker, she is passionate about making complex ideas accessible and inspiring the next generation to explore how emerging technologies can reshape the future of healthcare.

Infusions

COLLECTIF SCIENCE - SON

Interactive waves

DATE

08.07.2026

VENUE

La Pente
14 montée des Carmélites, 69001 Lyon

FORMAT

Interactive installation
Live coding
DJ set

CONTACT

infusions.collective@gmail.com

Infusions **est un collectif d'artistes et de chercheurs vivants entre Lyon et Lisbonne, dédié à l'exploration de nouvelles formes de fêtes faisant la part belle au temps réel et à l'interactivité.**

Installation AV interactive

INFUSIONS

Le son vous guette. Chaque geste le réveille, le tord, le transforme. Vous ne regardez plus l'œuvre — vous la jouez, et elle vous échappe déjà.

Performance Live coding

QUENDERA

Quand les lignes de codes font surgir rythmes et vagues sonores, c'est la salle qui pulse, dérape et se transforme — le futur est là.

DJ Set Progressive techno

DJ SPIKE

Rien de tel qu'un set qui déroule les kicks, les basses et les breaks pour se détendre et se dandiner un peu avant de continuer la soirée...