



Barcelona Summer School for Advanced Modeling of Behavior

19-27 July 2023

COURSE DIRECTORS



ALEX HYAFIL
CRM



MARION ROUAULT
CNRS and Paris Brain Institute



HEIKE STEIN
ENS Paris



CHRIS SUMMERFIELD
Oxford University Deepmind



KLAUS WIMMER
CRM

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ABOUT THE SUMMER SCHOOL

COURSE PHILOSOPHY

Our goal is to teach **advanced techniques in model-based analysis of behavior** (humans and other animals) to cognitive and computational neuroscientists at PhD and early career levels. This will be achieved through structured lectures and talks, together with a strong focus on hands-on tutorials and group projects aimed at making the obtained knowledge directly applicable to the participants' own research. Our goal is that the trainees acquire both the **conceptual basis** and the **technical skills** that will enable them to pursue a full modeling approach on their own when they come back to their lab.

LECTURES

We will begin each day with a **lecture that introduces the topic**, delivered by one of our faculty members. Lectures cover **relevant background** and the **state of the art** for the respective set of techniques. Our focus is not on teaching the mathematical derivations; instead, we will teach formal underpinnings where they are critical for providing a **conceptual understanding** of the approaches described.

TUTORIALS

We will devote extensive time (around 4 hours on a typical a day) to **implementing analyses on real-world behavioral datasets**. Experienced Teaching Assistants (TAs) will guide the trainees during all these tutorials.

GROUP PROJECTS

Participants will work in teams of three on a project involving **open-access, published behavioral datasets**. They will think about how to choose the most relevant of the techniques presented and to best apply them to these data, under supervision by TAs and faculty members. We expect the trainees to implement a (likely partial, yet sound) modeling analysis of these data during the course.

KEYNOTE TALKS

Two keynote research talks will focus on behavioral and/or neuroscience topics where cutting-edge modeling techniques have been successfully applied. Speakers will put emphasis on **how mechanistic models of behavior can illuminate cognitive and neuroscience experiments**.

ONE-TO-ONE MEETINGS WITH FACULTY MEMBERS

We plan one-to-one sessions between trainees and faculty that will provide the opportunity to talk in depth about their work, career plans, etc.





SCHEDULE



Day 0 Tuesday July 18th, 2023	
18:30	Welcome Reception
Day 1 Wednesday July 19th, 2023	
9:00 - 9:30	Registration
9:30 - 11:00	<i>What is a model?</i> Chris Summerfield (Oxford Univ / Deepmind)
11:00 - 11:30	Coffee Break
11:30 - 13:30	<i>Intro to modelling: logistic regression</i> Klaus Wimmer & Alex Hyafil (CRM)
13:30 - 14:30	Lunch Break (lunch on-site)
14:30 - 16:30	<i>Intro to modelling: parameter fitting and recovery</i> Klaus Wimmer & Alex Hyafil (CRM)
16:30 - 17:00	Break
17:00 - 19:00	<i>Intro to modelling: model comparison</i> Marion Rouault (Paris Brain Institute), Klaus Wimmer & Alex Hyafil (CRM)

Day 2 Thursday July 20th, 2023	
9:00 - 11:00	<i>Mental chronometry</i> Elaine Corbett (Univ College Dublin)
11:00 - 11:30	Coffee Break
11:30 - 13:30	<i>Simulating DDM</i> Max Shinn (UCL) & Tarryn Balsdon (University of Glasgow)
13:30 - 14:30	Lunch Break (lunch on-site)
14:30 - 16:30	<i>Fitting DDM</i> Max Shinn (UCL) & Tarryn Balsdon (University of Glasgow)
16:30 - 17:00	Break
17:00 - 19:30	- Projects kickoff (30 min intro/ expectations) - Project work brainstorm / faculty clinic (2h)

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Day 3 Friday July 21st, 2023	
9:00 - 11:00	<i>RL: Computational modelling for learning and decision-making</i> Maria Eckstein (Deepmind)
11:00 - 11:30	Coffee Break
11:30 - 13:30	<i>Fitting models to bandit tasks</i> Marion Rouault (Paris Brain Institute) & Manuel Molano-Mazón (CRM)
13:30 - 15:00	Lunch Break (Restaurant)
15:00 - 17:00	<i>Simulating a q-learner for maze navigation w eligibility trace</i> Chris Summerfield (Oxford Univ / Deepmind) & Manuel Molano-Mazón (CRM)
17:00 - 17:30	Break
17:30 - 19:00	Group presentations: ideas (5min+3min Q/feedback)

Day 4 Saturday July 22nd, 2023	
9:00 - 11:00	<i>Neural networks</i> Chris Summerfield (Oxford Univ / Deepmind)
11:00 - 11:30	Coffee Break
11:30 - 13:30	<i>Training an RNN</i> Manuel Molano-Mazón (CRM) & Heike Stein (ENS Paris)
13:30 - 15:00	Lunch Break (On your own)
15:00 - 19:00	<i>Project work / faculty clinic</i> at student residence
20:30	Dinner: Balthazar
Day 5 Sunday July 23rd, 2023	
15:00	Group activity (Optional)

Day 6 Monday July 24th, 2023	
9:00 - 11:00	<i>Project work / faculty clinic</i>
11:00 - 11:30	Coffee Break
11:30 - 13:00	<i>Project work / faculty clinic</i>
13:00 - 14:00	Lunch Break (lunch on-site)
14:00 - 16:00	<i>Bayesian models</i> Valentin Wyart (ENS Paris)
16:00 - 16:30	Break
16:30 - 18:30	<i>Bayesian models of perception</i> Tarryn Balsdon (University of Glasgow) & Heike Stein (ENS Paris)
18:30 - 20:00	<i>Keynote: The cognitive-motor interface</i> John Krakauer (Johns Hopkins)

Day 7 Tuesday July 25th, 2023	
9:00 - 11:00	<i>Latent variable models (mixture models, EM)</i> Heike Stein (ENS Paris) & Max Shinn (UCL)
11:00 - 11:30	Coffee Break
11:30 - 13:30	<i>Latent variable models (hidden Markov models)</i> Heike Stein (ENS Paris) & Max Shinn (UCL)
13:30 - 14:30	Lunch Break (lunch on-site)
14:30 - 18:30	<i>Project work / faculty clinic</i> at student residence
Day 8 Wednesday July 26th, 2023	
9:00 - 11:00	<i>Project work / faculty clinic</i>
11:00 - 11:30	Coffee Break
11:30 - 13:00	<i>Keynote: Intrinsic motivation in RL</i> Anne Collins (UC Berkeley)
13:00 - 14:30	Lunch Break (Restaurant)
14:30 - 16:30	- Wrap-up session (30min) - Open questions session (up to 2h)
16:30 - 17:00	Break
17:00 - 19:00	<i>Project work / faculty clinic</i> at student residence

Day 9 Thursday July 27th, 2023	
9:00 - 11:00	<i>Project work / faculty clinic</i>
11:00 - 11:30	Coffee Break
11:30 - 13:30	<i>Project work / faculty clinic</i>
13:30 - 14:30	Lunch Break (lunch on-site)
14:30 - 16:00	Project presentations (10min+5min Q)
16:00 - 16:30	Break
16:30 - 18:00	Project presentations
20:00	Farewell party: Casa de la Pradera

	Day 0 Tuesday 18/07/23	Day 1 Wednesday 19/07/23	Day 2 Thursday 20/07/23	Day 3 Friday 21/07/23	Day 4 Saturday 22/07/23	Day 5 Sunday 23/07/23	Day 6 Monday 24/07/23	Day 7 Tuesday 25/07/23	Day 8 Wednesday 26/07/23	Day 9 Thursday 27/07/23
9:00 - 9:30		Registration								
9:30 - 10:00										
10:00 - 10:30		What is a model?	Mental chronometry	Computational modeling for learning and decision-making	Neural networks					
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20:30 - 21:00	Welcome reception									
									Dinner: Balthazar restaurant	Farewell party: Casa de la Pradera



ANNE COLLINS

UC Berkeley



Dr. Anne Collins is an Associate Professor at University of California, Berkeley in Psychology and Helen Wills Neuroscience institute. Her research interests revolve around flexible decision-making: what mechanisms enable humans to learn flexibly and efficiently, to generalize their knowledge, and to quickly adapt to new situations? She uses computational modeling and behavioral experiments to tease apart the multiple processes that support such capabilities. Recent interests include 1) the contributions of working memory and executive functions to reinforcement learning; 2) hierarchical structure learning; 3) goals in learning; 4) habits' role in higher level cognition; and 5) developing new techniques to support investigating a broader range of cognitive models.

MARIA ECKSTEIN

Deepmind



Dr. Maria K. Eckstein is a senior research scientist at DeepMind and works at the intersection of natural and artificial intelligence, using insights from AI to understand mind and brain. She is particularly interested in human learning and decision making, and mostly using Reinforcement Learning and neural networks. Maria did a PhD in computational cognitive modeling at UC Berkeley, supervised by Prof. Anne Collins. Before, she worked towards a master's degree in neuroscience at the Graduate School of Systemic Neurosciences in Munich. Maria has a BA in philosophy and a BS in psychology.

ALEXANDRE HYAFIL

Centre de Recerca Matemàtica, Barcelona



Alex studies the core computations that underly perception, decision-making and cognitive control in humans and mammals in general, through a variety of techniques: computational modeling, psychophysics experiments in humans, analysis of non-human mammals behavior and recordings from collaborating experimental labs. He also develops method tools from advanced statistics and machine learning for analysis of neuroscience data. His PhD was obtained at Université Pierre et Marie Curie (Paris), and his long list of postdoc institutions include Ecole Normale Supérieure (Paris), Universitat Pompeu Fabra, Idibaps (both in Barcelona) and Princeton University. He has just joined Klaus as a Ramón y Cajal researcher at the CRM in Barcelona.

JOHN KRAKAUER 
Johns Hopkins



Dr. Krakauer is currently John C. Malone Professor, Professor of Neurology, Neuroscience, and Physical Medicine and Rehabilitation, and Director of the Brain, Learning, Animation, and Movement Lab (www.BLAM-lab.org) at The Johns Hopkins University School of Medicine. He is also an External Professor at the Santa Fe Institute and a Visiting Scholar at The Champalimaud Centre for the Unknown. He is Chief Medical Advisor to MindMaze. His areas of research interest are: (1) Experimental and computational studies of motor control and motor learning in humans (2) Tracking long-term motor skill learning and its relation to higher cognitive processes such as decision-making. (3) Prediction of motor recovery after stroke (4) Mechanisms of spontaneous motor recovery after stroke in humans and in mouse models (5) New neuro-rehabilitation approaches for patients in the first 3 months after stroke. (6) Philosophy of mind, philosophy of neuroscience.

Dr. Krakauer is also co-founder of the company MSquare Health (acquired by MindMaze) and of the creative engineering Hopkins-based project named KATA. KATA and MSquare are both predicated on the idea that animal movement based on real physics is highly pleasurable and that this pleasure is hugely heightened when the animal movement is under the control of our own movements. A simulated dolphin and other cetaceans developed by KATA has led to a therapeutic game that has been interfaced with an exoskeletal robot in a multi-site rehabilitation trial for early stroke recovery, and with motion tracking for cognitive therapy in the normal aged. Dr. Krakauer was profiled in the New Yorker in 2015 and his book, "Broken Movement: The Neurobiology of Motor Recovery after Stroke" was published by the MIT Press in the November 2017. He is slowly working on a new book on the mind and intelligence for Princeton University Press.

ELAINE CORBETT 
Univ College Dublin



Research Council Starting Grant.

Elaine Corbett is an Associate Professor in Biomedical Engineering at the School of Electrical and Electronic Engineering, University College Dublin, Ireland. She was awarded the PhD degree in Biomedical Engineering from Northwestern University in 2012. She did postdoctoral research in cognitive psychology at the University of Melbourne from 2014-2017, and then at Trinity College Dublin from 2017-2022. Her research combines computational modelling of human behaviour with electrophysiological recordings to understand processes of perceptual decision making. She is currently growing her laboratory funded by Science Foundation Ireland and a European

MARION ROUAULT 
ENS, Paris



After training in mathematics and biology at the Ecole Normale Supérieure in Lyon, France, Dr. Marion Rouault specialized in cognitive neuroscience during her Masters with research projects in London and Sydney. She completed her PhD with Prof Koechlin, investigating executive control and decision-making in the human prefrontal cortex. As a postdoc at University College London, Marion investigated how a sense of confidence is built and maintained, and its functional role in guiding learning and decision-making, at the behavioural, computational and neural levels. She is now a PI at the Paris Brain Institute studying metacognition and how confidence impacts decision-making.

CHRISTOPHER SUMMERFIELD 
Oxford University / DeepMind



Chris trained in psychology and neuroscience in London, Barcelona, New York, and Paris. He has been faculty in Oxford department of experimental psychology since 2008. His work focusses on learning and decision-making in humans. He is also a Research Scientist at Deepmind.

VALENTIN WYART 
ENS Paris



Valentin Wyart is leading the Inference and Decision-Making team of the Computational Cognitive Neuroscience Lab at the Ecole Normale Supérieure in Paris, France. His research team studies the computational and neural bases of human learning and decision-making under uncertainty, by combining mathematical modeling of behavior with multimodal recordings of brain activity. His recent work has identified cognitive noise in human inferences as a key source of behavioral variability under uncertainty.

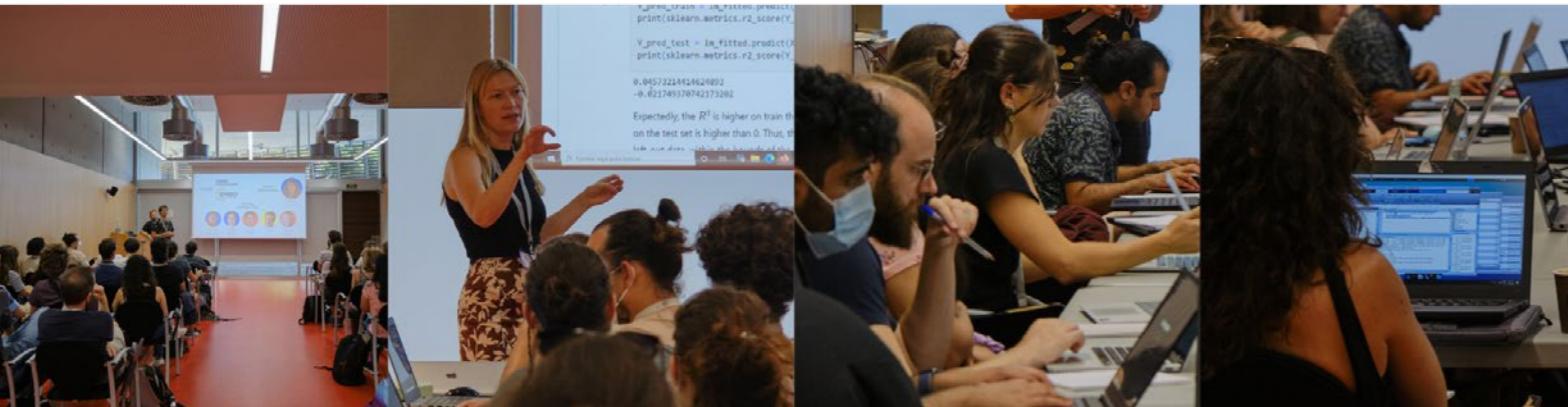
KLAUS WIMMER

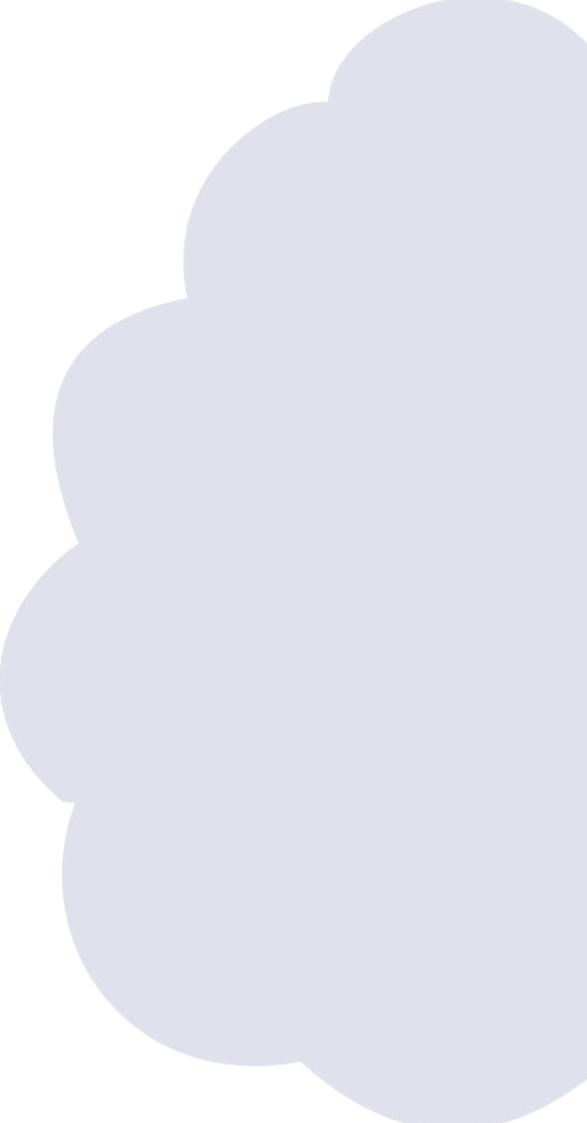


Centre de Recerca Matemàtica, Barcelona



Klaus studies neural circuit dynamics underlying cognitive function. In particular, he works on developing computational models of cortical circuits to shed light on the neural network dynamics underlying an animal's behavior during elementary cognitive tasks such as working memory and perceptual decision making. Modeling efforts are complemented by analysis of typically high-dimensional neural data obtained by collaborators (neural population recordings and human neuroimaging data) involving a range of statistical and machine learning tools. Klaus obtained a Ph.D. in Computational Neuroscience from Technische Universität Berlin. After postdoctoral training at IDIBAPS (Barcelona), Rochester University, and Universitat Pompeu Fabra, he is now a principal investigator in the computational neuroscience group at the CRM.





TEACHING ASSISTANTS

TARRYN BALSDON

University of Glasgow



Tarryn is a postdoctoral researcher working with Prof Marios Philiastides at the University of Glasgow, UK. Her research examines perceptual decision-making, and how we feel confident in our decisions. Beyond merely monitoring, confidence could be used for learning in the absence of explicit feedback, or even to control decision-making processes online. Using a combination of psychophysics, computational modelling, EEG, and fMRI, Tarryn's research teases apart the processes for decisions and confidence to examine the mechanisms involved in the influence of confidence on perceptual decisions.

MANUEL MOLANO

Centre de Recerca Matemàtica, Barcelona



I am a neuroscientist with a background in Mathematics. I work with Alex Hyafil at the Computational Neuroscience Group at the Centre de Recerca Matemàtica, in Barcelona. I use Recurrent Neural Networks to investigate the computational principles underlying decision making processes.

MAX SHINN

UCL



Max is interested in perceptual decision-making, fMRI connectomics, inhibitory neuron diversity, and the statistics of autocorrelated data. His background is in applied mathematics, with a PhD in computational neuroscience. Working with Daeyeol Lee and John Murray, he investigated of changing evidence during decision-making, and developed the PyDDM package for generalised drift diffusion models. He currently works with Kenneth Harris and Matteo Carandini in developing methods to link a cell's activity patterns to the genes it expressed. Max grew up in Minnesota in the US and currently lives in London. He also enjoys classical music and esoteric



Heike Stein is currently a postdoc at ENS in Paris. Trained as a cognitive neuroscientist, she now mostly enjoys modeling and data analysis of neurons and behavior. Heike gained her PhD from the University of Barcelona, where she worked with Albert Compte. In her thesis, she used psychophysics, EEG and spiking network models to understand how NMDA receptor dysfunction affects prefrontal dynamics and working memory. She now works in the Group for Neural Theory at ENS with Alex Cayco-Gajic, where she is learning about the cerebellum, large-scale neural recordings, and naturalistic behavior. Her current projects are on a novel tensor decomposition method for dimensionality reduction and on hidden Markov models that capture gait dynamics in mice. Heike loves good food, concerts, and an occasional hour and a half of sleep in the afternoon.



LIST OF PARTICIPANTS

ELAHEH AKBARIFATHKOUHI

Justus-Liebig-Universität Gießen, Germany



Ph.D. student in Computational Cognitive Neuroscience. Mainly interested in vision, specially functional organization of the ventral visual stream. I hike, bike and watch movies a lot, among other things.

FRANZISKA BRÄNDLE

Max Planck Institute for Biological Cybernetics, Germany



I'm a 4th year in the Computational Principles of Intelligence lab led by Eric Schulz in Tübingen, Germany. Before that, I studied Audiovisual Media and Cognitive Science. I'm working on computational modeling of human behavior by looking at gamified studies and large computer game datasets like "Little Alchemy 2". My research focuses on exploration and intrinsic motivation, i.e., strategies like learning progress, empowerment or goal-directed exploration.

In my free time, I enjoy playing board and video games, and I have a passion for theater directing and filmmaking.

NICOLÁS BRUNO

University of Buenos Aires, Argentina



I'm Nicolás M. Bruno, a driven Neuroscientist pursuing a PhD at the National University of Córdoba. My academic credentials include a Master's in Cognitive Sciences from École Normale Supérieure, Paris, and a Bachelor's in Psychology from the University of Buenos Aires.

In my professional journey, I have thrived as a Neuro-Data Scientist, creating innovative eye-tracking analysis pipelines to enhance our understanding of cognitive processes. As an Assistant Lecturer and Research Assistant, I have fostered academic growth in students across various universities.

NOEL FEDERMAN

IBIOBA-CONICET-MPSP, Argentina



Noel Federman is biologist. She earned her PhD in Neuroscience with Arturo Romano at University of Buenos Aires as a CONICET Graduate Fellow in 2010. For her doctoral research, Noel investigated neuronal epigenetic mechanisms important for memory persistence in crabs and mice. Currently, she is a research associate at Antonia Marin Burgin Lab in the IBIOBA-CONICET-MPSP institute (Argentina). Noel is using *in vivo* electrophysiological techniques in behaving mice to ask how learning and spatial contexts shape olfactory processing, and which functions have these neuronal mechanisms on behavior.

ISABEL GARON

New York University, USA



Isabel is a first year PhD student at NYU, where she is beginning her thesis advised by Dr. Cristina Savin and Dr. Dora Angelaki developing statistical tools for investigating dynamic and naturalistic navigation. Prior to graduate school she received her B.S. in Neuroscience from the University of Chicago where she did research with Dr. Jason MacLean, followed by a gap year doing research in spiking neural networks with Dr. Robert Legenstein at TU Graz in Austria. In her free time she likes to rock climb and explore New York City with her classmates.

BEHNAM GHAZINOURI

Ruhr-University Bochum, Germany



¡Hola! My name is Behnam. I completed my undergraduate studies in Physics before transitioning to Neuroscience during my master's degree. Currently, I'm a third-year Ph.D. candidate in computational neuroscience at the Ruhr-University Bochum, Germany. I develop a model to study spatial navigation and spatial memory with spiking neural networks. I'm skilled in Python and Matlab programming and also have experience with C++ and IDL. In my free time, I enjoy outdoor activities such as climbing and rowing. I'm excited to expand my knowledge and meet new people at the upcoming BAMB summer school!

NOAM GOLDWAY

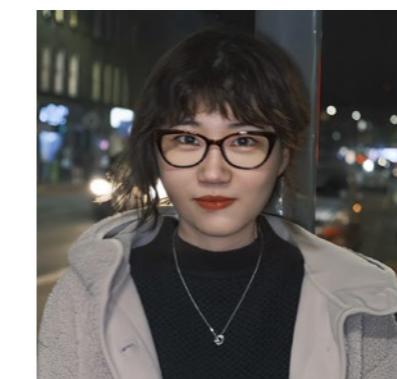
New York University, USA



Dr. Noam Goldway received his B.S. in Mind and Cognition Studies from Tel Aviv University and his Ph.D. from the Sagol School of Neuroscience at Tel Aviv University. His thesis focused on the neural representations of embodied emotion and the effect of psychoactive pharmacology on such representations. Dr. Goldway is now a postdoctoral fellow in the Department of Psychology at NYU. His research implements computational tools to investigate cognitive flexibility under psychedelics and across development.

TIANWEI GONG

University of Edinburgh, Scotland



Hi! You can call me Tia. I study causality and its twists and turns. I am currently a third-year psychology PhD student at the University of Edinburgh, Scotland. My thesis focuses on how people use time information to learn and reason about causal structure. I am looking forward to the summer weather in Barcelona :D

CARLOS GONZÁLEZ-GARCÍA

University of Granada, Spain



I'm a psychologist often navigating the intersection of cognitive and computational neuroscience. I'm primarily interested in the mechanisms involved in different instances of complex, flexible behavior.

KENZA KADRI

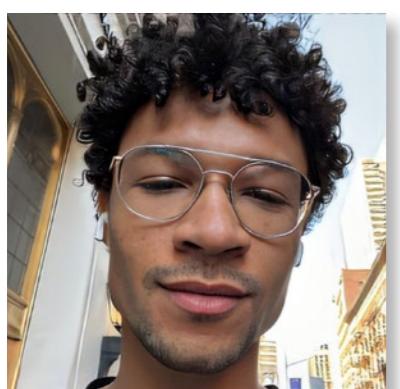
University of Plymouth, UK



I am a final-year PhD student in computational psychiatry working on the neural substrates of decision-making in addiction at the University of Plymouth (UK). My research interests span several different areas of neuroscience, particularly those at the interface between psychology, biology, and modelling. In my PhD, I focus on (1) the neural substrates implicated in decision-making, (2) how these substrates are perturbed in psychiatric disorders such as addiction and (3) how to model these perturbations and link them to aberrant networks.

SOLIM LEGRIS

New York University, USA



I am a PhD student at NYU in the Human and Machine Learning Lab and the Computation and Cognition Lab. I did my undergraduate degree at McGill University in the Cognitive Science program with a minor in Computer Science. I am interested in research simultaneously contributing to expanding our understanding of the mind and developing more human-like AI systems. Other than that, I like to play guitar, go bouldering and enjoy good food.

CHRISTINA MAHER

Icahn School of Medicine at Mount Sinai, USA



Christina is a Neuroscience Ph.D. student at the Icahn School of Medicine at Mount Sinai in NYC. She is co-mentored by Dr. Ignacio Saez, PhD and Dr. Angela Radulescu, PhD. Her research combines invasive electrophysiology in humans and computational modeling of decision-making to investigate how people learn in dynamic environments.

MARTA MIGÓ

Emory University, USA



Marta graduated from New York University with a B.A. in Psychology, a B.F.A. in Drama, and minors in Computer Science and Philosophy. She then worked as a Clinical Research Coordinator at Harvard Medical School for two years, in the Division of Neurotherapeutics. Currently, Marta is interested in using neuroimaging and computational psychiatry techniques to study free and perseverative thought patterns, such as worry and rumination, in mood and anxiety-related disorders.

LIDIIA NADPOROZHSKAIA

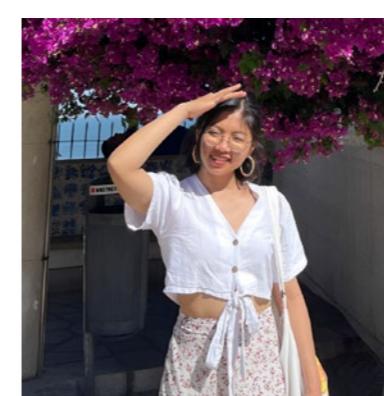
University of Basel, Switzerland



I'm from St Petersburg, Russia. My background is applied mathematics and physics. After my master's in neuroscience in Munich I moved to Basel to do a PhD in the same subject. Mainly I am interested in decision-making and neural correlates of behaviour and cognition, but also enjoy discussions about LLM and neural networks. In my free time I like gardening, doing yoga, and painting. I also enjoy travelling and visiting museums, so please give me recommendations of nice places if you know some!

ANH NGUYEN

Champalimaud centre for the Unknown, Portugal



My BSc is in Biotechnology and I'm now doing a PhD in Neuroscience, particularly in the field of perceptual decision making. When I'm not too busy playing with my mice and coding, I like to spend some time with my cat or practice jujitsu.

JAVIER ORTIZ-TUDELA

Universidad de Granada, Spain



I am a Junior Researcher at the Center for Mind, Brain and Behaviour (CIMCYC). I obtained my PhD from the Universidad de Granada in 2018 and then worked as a postdoctoral researcher at Goethe Universität (Frankfurt am Main). In 2023, I was awarded a Junior Researcher grant to develop my own line of research. During these past few years, I have worked on predictive processing in relation to perception and episodic memory. Nowadays, most of my (working) time goes to trying to understand cognition as a continuous stream of processes. Music, sports and beer take up the remaining time.

BERTALAN POLNER

Donders Centre for Cognition, Radboud University, NL



I am a cognitive psychologist with a PhD in clinical cognitive science. Currently, I work as a postdoc in the Learning and Decision-making Lab at the Donders Institute/Radboud University, Nijmegen. I am interested how fundamental decision-making is modulated by contextual factors such as uncertainty, controllability, and proximity of threat. I am also curious about the implications for mental health. In my spare time, I enjoy reading novels and non-fiction (particularly about economics), listening to Bach, and hiking or chilling out in nature.

GONZALO RUARTE

Universidad de Buenos Aires, Argentina



I am a computer science background but I have taken an interest in neuroscience and artificial intelligence two years ago. My research is focused on computer vision but I would like to know more about LLMs in the future. Football is my passion (Americans call it soccer) and the 2022 World Cup was definitely my most intense experience regarding football. I also enjoy listening to music, particularly Coldplay (whom I had the opportunity to watch live). I am a dog lover as well.

MARC SABIO

Universitat de Barcelona, Spain



I'm Marc, 26 and from Barcelona. Psychologist starting a career in cognitive neuroscience. My area of research is the predictive brain and more specifically the hippocampus as a prediction generator. It's hard to fit my scientific interests in this bio so I'll just say I'm pretty curious. As a good spaniard I'm passionate about food, good weather and sports in general, but I love to learn about other cultures (specially their food). I also enjoy solving puzzles, and that's why I love chess and sometimes even debugging code.

IRENE SALGARELLA

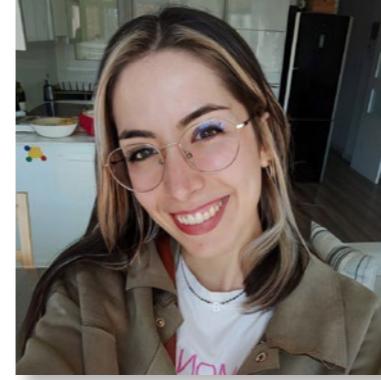
The Francis Crick Institute/UCL, UK



I obtained a BSc in Molecular Biology at the University of Padua, and an MSc in Neuroscience at the University of Trieste. I then spent time researching the connectivity and development of thalamic inhibitory neurons at the Delogu lab at King's College London, and then moved to the University of Cambridge to work with the Fly Connectomics group. I am currently a PhD student in the Kohl lab at the Francis Crick Institute. My research focuses on the mechanisms that lead virgin female mice to become parental after repeated exposure to pups.

BALMA SERRANO PORCAR

IDIBAPS, Spain



I am a fourth-year PhD student in experimental neuroscience with a biological background. Currently, in Brain Circuits and Behavior lab I try to understand the cortical dynamics of decision maintenance in short-term memory by training mice in a delayed response task, performing neural recordings, pharmacological and optogenetic manipulations, combined with extensive data analysis. I would like to become a versatile researcher able to connect cutting-edge experimental techniques with powerful computational tools. In my free time, I like to dance and release all my energy in Body Pump lessons.

ALI SHIRAVAND 
ENS Paris - PSL, France



I am a junior Ph.D. student in the Human Reinforcement Learning team at ENS Paris, where my focus is on the computational modeling of risky and multi-attribute decisions. Alongside my main project, I am also doing multi-agent simulations of RL agents to analyze their dynamics in social games. Additionally, the analysis of real-world behavior is compelling to me. I was working in the behavioral insight team of an online ride-sharing company, where our focus was to change the product design based on the users' behavior. Apart from research, I am passionate about photography and hiking!

AMEY SHENOY 
Technical University of Munich, Germany



I'm Amey Shenoy from Pune, India. I completed my Masters at the Indian Institute of Science Education and Research, and I'm currently pursuing my PhD at the Portugues Lab in TUM. I am interested in understanding how the brain adapts to uncertain environments and generates behavioral plasticity. My work involves designing behavioral paradigms for larval zebrafish to study experience-dependent behavior and probing the underlying neural circuits using light sheet microscopy. I enjoy building microscopes, and you can often find me having long walks or chilling by the lake.

LISA SPIERING 
University of Oxford, United Kingdom



I am a PhD student at the Department of Experimental Psychology. My research focusses on the neural circuits that allow humans to learn and make decisions, and how these mechanisms go awry when people suffer from psychological illness. To this end, I am using behavioural studies and neuroimaging in combination with computational modelling, such as reinforcement and Bayesian learning models. In my free time, I'm a passionate baker and try to get as close as possible to German bread.

ANNA SZEKELY 

Budapest University of Technology and Economics & Wigner Research Centre for Physics, Hungary



Anna is a Ph.D. student at the Budapest University of Technology and Economics and a member of the Computational Systems Neuroscience Lab (Research Centre for Physics). Her research interest focuses on the understanding of human intelligence via machine learning tools. In her current research project, she investigates the computations that support human transfer learning, by reverse engineering the internal models of participants from raw reaction times.

FLORA TAKÁCS 
University College London, UK



Flora is currently completing her PhD at UCL. She is interested in how we combine our senses to make decisions, likes combining experimental and analytical approaches, and making nice plots. In her free time she travels or focuses on improving her fencing skills.

THIAGO TARRAF VARELLA 
Princeton University, United States



I'm a fourth year PhD student in the Psychology Department at Princeton University and I study development and evolution of animal vocal behavior, recently focusing on curiosity and exploration. In practice, most of my research is doing data analysis and computer simulations. I am from a city near São Paulo, in Brazil. I graduated in Mathematical Neuroscience from University of São Paulo. When not in my computer, I love serenading my plants with classical or jazz piano, or going out with my bike.

LUIANTA VERRA



Max Planck Institute for Human Development, Germany



I am a PhD student at the Max Planck Research Group NeuroCode in Berlin. My research focuses on aversive learning and generalisation and particularly on how they relate to transdiagnostic psychiatric markers such as avoidance behaviour in anxiety. To answer these questions I use a combination of computational modelling and imaging techniques. Outside the lab I enjoy hiking, nature and good design.

AGATA WLASZCZYK



Technical University of Denmark



I am a PhD student at the Technical University of Denmark with a background in cognitive science and machine learning-focused computer science. In my work, I develop models of audio-visual integration in speech perception and I investigate how the categorical perception (i.e. syllables) emerges from the continuous sensory inputs. I also have an interest in developing and evaluating methods for quantifying uncertainty in the Bayesian observer models. In my free time, I like attending art events, cooking and singing.

JIEYING (HOLLY) ZHANG



Shanghai Jiaotong University, China



Hello, I'm Holly, working as a research assistant at Shanghai Jiaotong University in China. My research primarily focuses on computational psychiatry, decision-making modeling, and fMRI. I have previously worked with OCD patients, contributing to my understanding of psychiatric conditions. I hold a bachelor's degree in Artificial Intelligence from Fudan University in Shanghai, China, where my interest in cognitive science sparked. Beyond academics, I find joy in scuba diving and hiking. In addition, I have a deep appreciation for narratives and European intellectual history.





CODE OF CONDUCT & DATA SHARING POLICY

CODE OF CONDUCT

BAMBI is adopting the practice of defining a meeting code of conduct and providing information for participants on our ethics policies as well as resources for filing complaints. This code of conduct is based on standards and language set at other meetings, whose organizing boards convened special working groups of scientific and legal experts to set their policies. We follow, in particular, those guidelines established for the Gordon Research Conferences and the Society for Neuroscience Annual Meeting.

The following code of conduct has been adapted from:

http://www.cosyne.org/cosyne19/code_of_conduct_at_cosyne.pdf

Other online resources:

<http://changingourcampus.org/>

<https://www.sfn.org/Membership/Professional-Conduct/SfN-Ethics-Policy>

At BAMBI, we strive for open and honest intellectual debate as part of a welcoming and inclusive atmosphere. All participants should promote rigorous analysis of all science presented for or at the meeting in a manner respectful to all attendees. To help maintain an open and respectful community of scientists, BAMBI does not tolerate illegal or inappropriate behavior during the meeting, including violations of applicable laws pertaining to destruction of property, or harassment of any kind, including sexual harassment. BAMBI condemns inappropriate or suggestive acts or comments that demean another person by reason of their gender, gender identity or expression, race, religion, ethnicity, age or disability or that are unwelcome or offensive to other members of the community or their guests. BAMBI will review allegations of any such behavior on a case-by-case basis, and violations may result in the prohibition on future attendance by particular individuals. BAMBI believes home institutions and employers of our event attendees, including research institutions, companies, and other organizations, are best equipped to investigate allegations pertaining to, or violations by their faculty members, trainees, employees or affiliated individuals, and to evaluate and determine appropriate actions consistent with their employment and academic obligations. In the event of an allegation of harassment at BAMBI, we will document and will generally refer any allegations to an attendee's organization for its review. To the extent possible, documentation will be held in confidence by BAMBI executive committee.

If you believe you have been subjected to or have otherwise experienced behavior at BAMBI event that violates BAMBI Code of Conduct, please act promptly to report the issue so that steps may be taken to address the situation immediately. You may notify directly one of the meeting organizers. If you are reluctant to speak with an organizer or session chair for any reason, you may notify Nu'ria Hernandez, CRM's Executive Administrator, at the BAMBI school or by email to n hernandez@crm.cat. Reports requesting anonymity will be respected, although BAMBI reserves the right to notify appropriate law enforcement if the allegations are deemed serious enough to warrant such notice. It should be noted that BAMBI's ability to investigate or address anonymous reports may be limited or otherwise affected by the need to balance concerns over privacy and fairness to all concerned. Following completion of BAMBI's inquiry, any action to be taken by BAMBI against the person accused of acting inappropriately will be determined by BAMBI in its sole discretion and may include discharge from the summer school or restrictions on their future attendance.

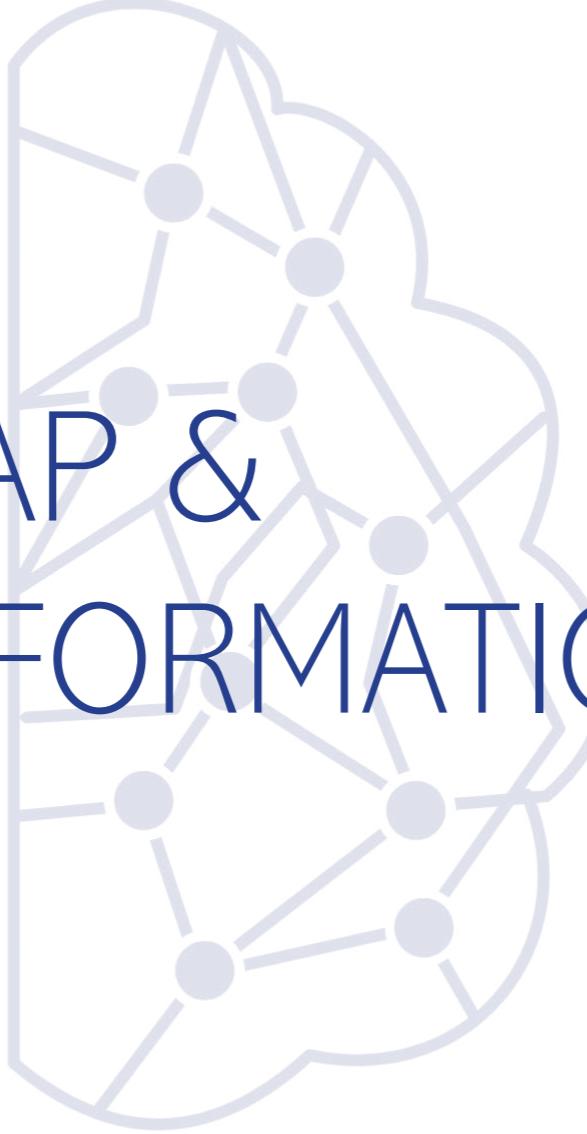
DATA SHARING POLICY AT BAMBI!

It is possible (and in the organizers' opinion even desirable) that during the Project work, one of the group participants or its tutor make significant contributions to a project that would be incorporated into a participant's published research. Our policy is that **such contribution does not generally give right to authorship in further published research**. If one gives a brilliant idea, it should be taken as if it were a brilliant idea from someone at a poster at a conference or at group meeting (an acknowledgement is always welcome !). In the (again desirable) event that an open collaboration would continue after the summer school between some group participants, then contributions should be recognized accordingly in authorship, as for any standard collaboration.





MAP & INFORMATION



Institut d'Estudis Catalans

Carrer del Carme, 47
08001 Barcelona

The Institut d'Estudis Catalans is a cultural and scientific institution that offers space for talks, workshops, and conferences. It is located in the heart of Barcelona, in the lively Raval neighborhood.

Wifi Network: IEC-Actes

Access Code: J7S3C6

Accommodation

Housing for students will be provided close to the Institut d'Estudis Catalans at the [University Residence Barcelona](#) in Ciutat Vella. Plaça de les Caramelles, 5, 08001 Barcelona

Social media

The CRM welcomes the use of social media platforms during its activities. For those of you interested, you can follow the CRM social media accounts at:

Twitter: [@CRMematica](#)

Instagram: [crmathematic](#)

Threads: [crmathematic](#)

If you post any pictures during the event, please don't forget to @ us and include the official hashtag [#BAMB2023](#).

