CÉDRIC FOUCAULT

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EDUCATION AND PROFESSIONAL EXPERIENCE

2024 – present **Junior Research Fellow of Christ Church at the University of Oxford**
Early-career research position awarded by Christ Church college to conduct independent research on a prestigious three-year fellowship
In collaboration with Laurence Hunt's lab and Matthew Rushworth's lab
Department of Experimental Psychology, University of Oxford, UK

2020 – 2023 **PhD in Cognitive Computational Neuroscience at NeuroSpin**
Supervised by Florent Meyniel
Cognitive Neuroimaging Unit, NeuroSpin (CEA-Inserm),
University of Paris-Saclay, & Sorbonne University, Paris, France
Thesis: *"Adaptive learning in humans, brains and neural networks: The role of uncertainty and probabilities"*

2018 – 2020 **M.S. of Research in Cognitive Science (CogMaster)**
Highest honors (mention très bien)
École Normale Supérieure de Paris & University of Paris, France

2019 – 2020 **M.S. Research Intern at NeuroSpin**
Supervised by Florent Meyniel
Cognitive Neuroimaging Unit, NeuroSpin (CEA-Inserm), Gif/Yvette, France

2018 – 2019 **M.S. Research Intern at Integrative Neuroscience & Cognition Center**
Supervised by Claire Sergent
Integrative Neuroscience & Cognition Center, Paris, France

2015 – 2018 **iOS Software Engineer at Apple**
Core User Interface Team
Apple, Cupertino, California, USA

2012 – 2014 **M.S. of Research in Computer Science & Human-Computer Interaction**
Highest honors (mention très bien)
École Normale Supérieure Paris-Saclay & University Paris-Saclay, France

2014 (7 mos) **M.S. Research Intern at Siemens Corporate Research**
Supervised by Sam Zheng
User Experience Group, Siemens Corporate Research, Princeton, USA

2013 (5 mos) **M.S. Research Intern at UC Santa Cruz**
Supervised by Sri Kurniawan
ASSIST Lab, University of California Santa Cruz, USA

2011 – 2012 **B.S. in Computer Science**
Highest honors (mention très bien)
École Normale Supérieure Paris-Saclay & University of Paris, France

2012 (3 mos) **B.S. Research Intern at Inria Grenoble**
Supervised by Radu Patrice Horaud
Perception Group, Inria Grenoble, France

2010 – 2011 **B.S. in Electrical & Telecommunications Engineering**
Highest honors (mention très bien)
École Normale Supérieure Paris-Saclay & University Paris-Saclay, France

2008 – 2010 **Classes Préparatoires: MPSI, PSI***
Lycée Fénelon Sainte-Marie, Paris, France
2 years of intensive Maths/Physics preparing the competitive entrance to top French "Grandes Écoles"

GRANTS AND FELLOWSHIPS

2024 – 2027 Junior Research Fellowship, Christ Church, University of Oxford
Highly competitive research position that allows early-career researchers to undertake independent research and establish themselves as scholars.

2022 CEA PACE mobility award (grant for a visit of a few weeks to support PhD student mobility for a post-doctoral research in Europe)

2020 – 2023 PhD fellowship from École Normale Supérieure Paris-Saclay (Contrat Doctoral Spécifique Normalien, 3 years)

2010 – 2014 École Normale Supérieure Paris-Saclay (Normalien, 4 years)

PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED JOURNALS AND CONFERENCES

Published/In press

Foucault, C., & Meyniel, F. (2021). "Gated recurrence enables simple and accurate sequence prediction in stochastic, changing, and structured environments". *eLife*.
Article: doi.org/10.7554/eLife.71801.
Code: github.com/cedricfoucault/networks_for_sequence_prediction

Zheng, X. S., **Foucault, C.**, Matos da Silva, P., Dasari, S., Yang, T., & Goose, S. (2015). "Eye-wearable technology for machine maintenance: Effects of display position and hands-free operation". In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (pp. 2125-2134).

Zheng, X. S., Matos da Silva, P., **Foucault, C.**, Dasari, S., Yuan, M., & Goose, S. (2015). "Wearable solution for industrial maintenance". In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems* (pp. 311-314).

Foucault, C., Micaux, M., Bonnet, D., & Beaudouin-Lafon, M. (2014). "SPad: a bimanual interaction technique for productivity applications on multi-touch tablets". In *CHI'14 Extended Abstracts on Human Factors in Computing Systems* (pp. 1879-1884).

Submitted/In preparation

Foucault C., & Meyniel F. "Two determinants of dynamic adaptive learning for magnitudes and probabilities". Submitted (in review).
Preprint (bioRxiv): doi.org/10.1101/2023.08.18.553813

Foucault C.*, Bounmy T.*, Demortain S., Thirion B., Eger E., Meyniel F. “A nonlinear code for event probability in the human brain”. *co-first authors. In preparation for submission. Preprint (bioRxiv): doi.org/10.1101/2024.02.28.582455

POSTER PRESENTATIONS AT INTERNATIONAL CONFERENCES

Foucault C.*, & Meyniel F. “Two determinants of adaptability in learning magnitudes and probabilities”. *Conference on Cognitive Computational Neuroscience* (Oxford, UK), August 2023. doi [conference abstract]: 2023.ccneuro.org/view_paper.php?PaperNum=1288

Foucault C.*, & Meyniel F. “Two determinants of adaptability in learning magnitudes and probabilities”. *Symposium on Biology of Decision-Making* (Paris, France), June 2023.

Foucault C.*, Bounmy T.*, Demortain S., Thirion B., Eger E., Meyniel F. “A neural code for probabilities”. *Conference on Cognitive Computational Neuroscience* (San Francisco, USA), August 2022. *co-first authors. doi [conference abstract]: 10.32470/CCN.2022.1033-0

Foucault C., & Meyniel F. “Learning to make Bayes-optimal predictions with recurrent neural networks” [Poster, Video, and Conference abstract]. *Bernstein Conference* (online), September 2020. doi [conference abstract]: 10.12751/nncn.bc2020.0101

INVITED TALKS

Invited speaker at a laboratory seminar of the Motivation Brain Behavior group, Paris Brain Institute, University of Oxford, United Kingdom, February 2024. Title: “Neural representation of uncertainty and probability in learning”.

Invited speaker at the laboratory seminar of Professor Laurence Hunt and Professor Jill X O’Reilly, Department of Experimental Psychology, University of Oxford, United Kingdom, November 2022. Title: “Learning and adapting in an unpredictable and changing environment”.

Seminar on neural networks and how to characterize their function with Jean Daunizeau’s team at the Motivation Brain Behavior group, ICM (Brain & Spine Institute), Paris, France, September 2022.

Invited seminar speaker at the Parietal team, NeuroSpin, Inria-CEA, Gif/Yvette, & Université Paris-Saclay, France, February 2022.

Invited seminar speaker at the Halassa Lab (online), MIT Department of Brain and Cognitive Sciences, Cambridge, MA, USA, October 2021. Title: “Gated recurrence enables simple and accurate sequence prediction in stochastic, changing, and structured environments”.

TEACHING AND MENTORING

2023	Co-supervision with Florent Meyniel of Yannaël Bossard (undergraduate student, L3 Mechatronics, ENS Rennes).
2021 – 2022	Teaching assistant for the “Programming for Cognitive and Brain Sciences” graduate course at the CogMaster (ENS). Lectures+Tutorials: 42h.
2020 – 2021	Teaching assistant for the “Programming for Cognitive and Brain Sciences” graduate course at the CogMaster (ENS). Lectures+Tutorials: 39h.

INSTITUTIONAL SERVICE

2022 – 2023 Weekly meeting organizer for the Computational Brain team at NeuroSpin (define agenda, date and time for the meeting, coordinate with speakers and attendees, send announcements, set up room/equipment, propose and schedule activities for upcoming meetings…).

2020 – 2023 Management of computer systems and devices for the Computational Brain team at NeuroSpin (research and purchase new equipment, track inventory, set up equipment for access to internal network and computing resources, provide instructions to facilitate team members' use…)

SUMMER SCHOOLS

08-2021 (3 wks) Neuromatch Academy Deep Learning Summer School.

07-2020 (3 wks) Neuromatch Academy Computational Neuroscience Summer School.