

# 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*  
Working in collaboration with Laurence Hunt's research group in the 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 Fénélon 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. (2024). “Two determinants of dynamic adaptive learning for magnitudes and probabilities”. *Open Mind: Discoveries in Cognitive Science*.

Article: [doi.org/10.1162/opmi\\_a.00139](https://doi.org/10.1162/opmi_a.00139)

Data & Code: <https://github.com/cedricfoucault/ada-learn>

**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](https://doi.org/10.7554/eLife.71801).

Code: [github.com/cedricfoucault/networks\\_for\\_sequence\\_prediction](https://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).

## In review/Submitted/In preparation

**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 review at *Nature Communications*.

Preprint (bioRxiv): [doi.org/10.1101/2024.02.28.582455](https://doi.org/10.1101/2024.02.28.582455)

## POSTER PRESENTATIONS AT INTERNATIONAL CONFERENCES

**Foucault C.**, Lilian A. Weber, & Laurence Hunt. “Learning in dynamic environments through joint inference of mean and variance”. *RLDM: Multi-disciplinary Conference on Reinforcement Learning and Decision Making* (Dublin, Ireland), June 2025.

**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](https://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](https://doi.org/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](https://doi.org/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

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|-------------|--|
| 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

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|----------------|---|
| 2024 – present | Member of the Early Career Researcher Committee in the Department of Experimental Psychology, University of Oxford  |
| 2024 – present | Member of the People and Culture Committee in the Department of Experimental Psychology, University of Oxford   |
| 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

- 07-2024 (2 wks) Neuromatch Academy NeuroAI Summer School.
- 08-2021 (3 wks) Neuromatch Academy Deep Learning Summer School.
- 07-2020 (3 wks) Neuromatch Academy Computational Neuroscience Summer School.