

JAVIER ALEJANDRO MASÍS OBANDO

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PROFESSIONAL EXPERIENCE

Princeton University, Princeton, NJ
Presidential Postdoctoral Research Fellow
Advisor: Jonathan D. Cohen

August 2020–present

EDUCATION

Harvard University, Cambridge, MA
Ph.D. in **Biology**
Department of Molecular and Cellular Biology
Advisor: David D. Cox

May 2020

Harvard University, Cambridge, MA
A.M. in **Biology**

May 2015

Princeton University, Princeton, NJ
A.B. in **Molecular Biology**, *Summa Cum Laude*
Certificate in **Neuroscience**

June 2013

PUBLICATIONS

- **Javier Masís**, Travis Chapman, Juliana Y. Rhee, David D. Cox, Andrew M. Saxe. Strategically managing learning during perceptual decision making. *Elife* 12: e64978, 2023.
- Sebastian Musslick* & **Javier Masís***. Pushing the bounds of bounded optimality. (In press at *Cognitive Science*.)
- **Javier Masís**, Sebastian Musslick, Jonathan D. Cohen. The Value of Learning and Cognitive Control Allocation. *Proceedings of the 43rd Annual Meeting of the Cognitive Science Society*. Vienna, 2021.
- Grigori Guitchoints, **Javier Masís**, Steffen B.E. Wolff, David D. Cox. Encoding of 3d head orienting movements in the primary visual cortex. *Neuron* 108 (3): 512-525 e4, 2020.
- **Javier Masís**, David Mankus, Steffen B.E. Wolff, Grigori Guitchoints, Maximilian Joesch, David D. Cox. A micro-CT-based method for quantitative lesion characterization and electrode localization. *Scientific Reports* 8(1): 5184, 2018.
- **Javier Masís**, David Mankus, Steffen B.E. Wolff, Grigori Guitchoints, Maximilian Joesch, David D. Cox. A micro-CT-based method for characterizing lesions and locating electrodes in small animal brains. *Journal of Visualized Experiments* e58585, 2018.

INVITED TALKS

- 43rd Annual Meeting of the Cognitive Science Society, Vienna, Austria. (July 2021)
- Neuroscience of Cognitive Control Lab, Princeton University, NJ. (August 2019)
- Sainsbury Wellcome Centre, University College London, U.K. (March 2019)
- Carandini/Harris Lab, University College London, U.K. (March 2019)
- Cognitive, Linguistic and Psychological Sciences, Brown University, RI (February 2019)
- Center for Neural Science, New York University, NY (October 2018)
- Summerfield Lab, University of Oxford, Oxford, U.K. (July 2018)
- DeepMind, London, U.K. (July 2018)

FUNDING

- **Alfred P. Sloan Foundation**, **NOMIS Foundation**, and **New York University**, Sloan-NOMIS Summer School on Cognitive Foundations of Economic Behavior, 2022.
- **Dean of the Faculty**, Princeton University. Presidential Postdoctoral Research Fellowship, 2020.
- **Harvard Graduate Student Council**, Harvard University. Conference Travel Award, 2019.

- **Harvard Center for Biological Imaging (HCBI)**, Harvard University. Simmons Award, 2018.
- **Mind Brain Behavior (MBB)**, Harvard University. *Diversity and plasticity of visual processing centers in the jumping spider*. Graduate Student Award, Interdisciplinary Project, 2018.
- **Harvard Brain Science Initiative (HBI)**, Harvard University. *Neuroanatomy of the visual system in the jumping spider*. Young Scientist Travel Award, 2018.

AD-HOC REVIEWING

- *Journal of Neuroscience Methods*
- *IEEE Transactions on Biomedical Engineering*
- *Frontiers in Neuroscience*
- *Psychological Research*
- *Cognitive Science Society*

SELECTED CONFERENCES

- **Javier Masís***, David E. Melnikoff*, Lisa Feldman Barrett, Jonathan D. Cohen. *When to choose: The role of information seeking in the speed-accuracy tradeoff*. Workshop on Information-Theoretic Principles in Cognitive Systems at *NeurIPS 2022*.
- **Javier Masís**, Keno Juechems, Tom Ringstrom, Athena Akrami. *The what, how and when of learning*. Workshop (co-organizer) at *Cosyne 2022*.
- **Javier Masís**, Sebastian Musslick, Jonathan D. Cohen. *The Value of Learning and Cognitive Control Allocation*. Talk at *43rd Annual Meeting of the Cognitive Science Society 2021*.
- Juliana Y. Rhee, Cesar Echavarria, **Javier Masís**, and David D. Cox. *Encoding object transformations across distinct areas of rodent visual cortex*. Abstract W82 at *Bernstein Conference 2019*.
- **Javier Masís**, David D. Cox, and Andrew M. Saxe. *Rats strategically manage learning during a decision-making task*. Abstract at *Reinforcement Learning & Decision-Making 2019*.
- Grigori Guitchounts, **Javier Masís** and David D. Cox. *Head direction and orienting-suppression signals in primary visual cortex of freely-moving rats*. Talk at *Cosyne 2019*.
- **Javier Masís**, Andrew M. Saxe and David D. Cox. *Rats optimize reward rate and learning speed in a 2-AFC task*. Poster presentation at *Cosyne 2018*.
- **Javier Masís**, David Mankus, Steffen B. E Wolff, Grigori Guitchounts, Maximilian Joesch, and David D. Cox. *Novel method for quantitative brain lesion characterization and electrode localization*. Poster presentation 367.19 at *Society for Neuroscience 2016*.

TEACHING & MENTORING

Mentor Princeton Neuroscience Institute, Princeton University Fall 2021 - Present

- Co-mentoring Rodrigo Carrasco (PhD student) at Sainsbury Wellcome Centre (UCL) with Andrew Saxe
- Developing neural network theory of cognitive control allocation during learning
- Theory provides analytical solutions to learning dynamics as function of arbitrary control signal trajectory

Teacher Princeton Neuroscience Institute, Princeton University Fall 2021

- Taught a seminar for juniors majoring in neuroscience
- Focus on learning how to read scientific literature
- Evaluated students' junior independent work during course

Workshop Leader Princeton Neuroscience Institute, Princeton University September 2021

- Co-developed and taught a workshop on an introduction to neural network modeling
- Materials include a Google Colab notebook for interactive learning of backpropagation & other concepts
- Workshop was aimed at a psychological crowd across numerous universities

Producer and Content Developer HarvardX, Harvard University January 2015 – 2017

- Development team for MCB80x, a massive open online course (MOOC) with tens of thousands of students
- Produced four short documentaries exploring the relationship between neuroscience and art
- Duties included content generation, script meetings, and coordinating with experts in the studied topics

Teaching Fellow Department of Molecular & Cellular Biology, Harvard University Fall 2014 and 2015

- Received two certificates of distinction in teaching for student ratings of above 4.8/5.0

- Taught and prepared weekly sections for 12 undergraduates
- Designed & coordinated visit to Harvard Art Museums to explore relationship between neuroscience & art

Student Mentor Cox Lab, Harvard University June 2014 – May 2020

- Received a certificate of completion for the Life Sciences Education Office Mentorship Workshop Series
- Led a reading course for undergraduates in the lab the summer of 2014
- Mentored 2-3 undergraduates during the summer and the school year

ENTREPRENEURIAL EXPERIENCE

Co-Founder and Head of Business Development Shuffix, Inc. January 2016 – 2018

- Shuffix leveraged big data and cloud computing to aggregate recreational activities worldwide
- Accepted at Yale Entrepreneurial Institute and Harvard Innovation Labs
- Finalist at President’s Innovation Challenge 2017, Harvard’s most prestigious business competition

HONORS

Presidential Postdoctoral Fellowship, Dean of the Faculty, Princeton University August 2020
Peralta Award, Department of Molecular and Cellular Biology, Harvard University September 2019
Finalist, President’s Innovation Challenge, Harvard University Spring 2017
Honorable Mention, National Science Foundation GRFP April 2015
Certificate of Distinction in Teaching, Harvard University Fall 2014 & Fall 2015
Zukerman Fellow, Harvard University January 2014
Summa Cum Laude, Princeton University June 2013
Junior Member, Sigma Xi Research Society June 2013
Rhodes Scholarship Finalist, Rhodes Trust November 2012
Nancy Newman, MD '78 & Valerie Biousse, MD Senior Thesis Research June 2012
Fund for Neuroscience, Princeton University

SKILLS & LANGUAGES

Native Speaker: English, Spanish

Highly Proficient: French, Portuguese

Programming: Experience with Python and Matlab. Limited experience with Mathematica and Unix

Laboratory: Experimental & computational neuroscience, basic machine shop