Leonardo Casarsa de Azevedo

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Education

2013-2015   **M.Sc. in Neural Information Processing**, *International Max Planck Research School*, Tübingen, Germany.
Thesis: Causal Inference in Neuroimaging

2008-2012   **B.Sc. in Molecular Sciences**, *University of São Paulo*, São Paulo, Brazil.
Research: Mathematical Modeling of the Emergence of Altruism

Research Experience

Feb 2016 - now   **Visiting Graduate Student**, *MIT, Brain and Cognitive Sciences*, Cambridge - MA, USA.
Advisor: Vikash Mansinghka

Description:
- Analysis of datasets including fMRI data, semantic/linguistic data, psychiatric survey data, and physiological biomarker data with probabilistic programming systems (BayesDB, CrossCat);
- Development of a bayesian search engine for structured sparse datasets based on computational models of human categorization [*ongoing*].

Aug 2015   **Summer Course Project**, *Center for Brains Minds and Machines*, Woods Hole - MA, USA.
Title: Probabilistic Programming and Bayesian Structure Learning
Advisor: Joshua Tenenbaum
Description:
- Bayesian structure learning of a shallow neural network for the XOR problem using VentureScript.

Oct-Aug 2015   **Master Thesis**, *Max Planck Institute for Intelligent Systems, Department of Empirical Inference*, Tübingen, Germany.
Title: Causal Inference in Neuroimaging
Advisor: Moritz Große-Wentrup
Description:
- Setup EEG and Eye Tracker laboratory;
- Design and development of covert visual attention paradigm with PsychToolbox;
- Conducing experiment on ten participants;
- Preprocessing and analysis of behavioral and EEG data;
- Writeup of Master Thesis;

Sep-Oct 2014   **Lab Rotation Project**, *Max Planck Institute for Intelligent Systems, Department of Empirical Inference*, Tübingen, Germany.
Title: Projection Methods for Large Linear Systems
Advisor: Philipp Hennig
Description:
- Writeup of essay on the derivation of projection methods for iteratively solving linear systems.

2013-2015   **Research Assistant**, *Max Planck Institute for Biological Cybernetics, Department of Physiology of Cognitive Processes*, Tübingen, Germany.
Advisors: Nikos Logothetis & Matthias Munk
Description:
- Design and development of fine-motor learning paradigm for monkeys;
- Behavioral training of one Rhesus monkey for the paradigm;
- Write up of project proposal titled "Striatocortical interactions underlying procedural learning"
- Presentation of project proposal at a scientific advisory board meeting.

2012-2013   **Research Assistant**, *Max Planck Institute for Biological Cybernetics, Department of Physiology of Cognitive Processes*, Tübingen, Germany.
Advisor: Georgios Keliris
Description:
- Behavioral training of one Rhesus monkey for an fMRI visual attention experiment;
- Assistance in experimental procedures involving surgery, electrophysiology, fMRI, and 2-photon microscopy in monkeys.

2010-2012   **Bachelor Thesis**, *Institute for Mathematics and Statistics at the University of São Paulo - Applied Mathematics*, São Paulo, Brazil.
Title: Mathematical Modeling of the Emergence of Altruism
Advisor: Renato Vicente
Description:
- Reproduction of theoretical and computational results from two selected papers.

Scholarships & Awards

2016   **Travel Award and Funding for Student Visit at MIT (1 year)**.
2015   **Travel Award for the Brains, Minds and Machines Summer Course**.

Posters

Probabilistic programming for constraint-based causal learning, <u>Casarsa L</u>, Mansinghka V, *PPAML PI Meeting*, Jul 2016, Columbia University, New York, USA.

Analysis of birth cohort studies in BayesDB, <u>Casarsa L</u>, Karimi B, Mansinghka V, *PPAML PI Meeting*, Jul 2016, Columbia University, New York, USA.

Eigenvector centrality mapping during natural viewing in the macaque brain, Azevedo FAC, Ortiz-Rios M, <u>Azevedo LC</u>, Balla DZ, Lohmann G, Logothetis NK, Keliris GA, *IBRO*, Jul 2015, Rio de Janeiro, Brazil.

Dynamic functional connectivity reflects complex audiovisual scene changes during cognitive processing, Ortiz-Rios M, Azevedo FAC, <u>Azevedo LC</u>, Balla DZ, Lohmann G, Logothetis NK, Keliris GA, *IBRO*, Jul 2015, Rio de Janeiro, Brazil.

Effects of visual attention on neural processing in Rhesus V1 by simultaneous electrophysiology and BOLD-fMRI, Azevedo FAC, <u>Azevedo LC</u>, Logothetis NK, Keliris GA.

Presented in the following conferences:

1. *Neurowissenschaftliche Nachwuchskonferenz*, Nov 2012, Schramberg, Germany.
2. *Workshop on Orienting of attention: neural implementation, underlying mechanisms and clinical implications*, Nov 2012, Tübingen, Germany.
3. *3rd NetWorks! Symposium*, Sep 2012, Berlin, Germany.

Oral Presentations

Oct 2015   **Can computers treat sick brains?**, *Thesis in Three Competition, MPI for Intelligent Systems*, Stuttgart, Germany.

⋆   Awarded 2nd Place in the M.Sc. category

Sep 2012   **Attention and V1: an attempt to record BOLD and Electrophysiology simultaneously**, *3rd NetWorks! Symposium*, Berlin, Germany.

Teaching Experience

2014   **Essential Math**, *International Max Planck Research School*, Eberhard Karls Universität Tübingen.

Master Teaching Assistant

Responsibilities: Tutorials and homework correction.

2011   **Physics II - Oscillations and Thermodynamics**, *Molecular Sciences*, University of São Paulo.

Undergraduate Teaching Assistant

Responsibilities: Substitute lectures, tutorials, and homework correction.

Conference Organization

Jul 2015   **Machine Learning Summer School 2015**, *Max Planck Institute for Intelligent Systems*, Tübingen, Germany.

Student Volunteer

Sep 2013   **4th Networks! Symposium**, *Max Planck Institute for Biological Cybernetics*, Tübingen, Germany.

Keynote Lecturers: Niels Birbaumer, Roberto Lent, Nikos K. Logothetis.

Organizing Committee

Additional Education

Sep 2015   **Workshop on Gaussian Processes for Global Optimization**, *University of Sheffield*, Sheffield, UK.

Aug 2015   **Brains, Minds and Machines Summer Course**, *Center for Brains, Minds and Machines*, Marine Biological Laboratory, Woods Hole, USA.

Jul 2015   **Machine Learning Summer School**, *Max Planck Institute for Intelligent Systems*, Tübingen, Germany.

Aug 2014	**Memory and Consciousness Summer School**, *Eberhard Karls Universität Tübingen*, Tübingen, Germany.
Aug 2013	**1st Swiss Computational Neuroscience Summer School**, *Friedrich Miescher Institute*, Basel, Switzerland.
Jul 2009	**27th Brazilian Colloquium in Mathematics**, *Institute of Pure and Applied Mathematics (IMPA)*, Rio de Janeiro, Brasil.

Skills

Programming Languages	Python, MATLAB, C (*proficient*), MIT-Scheme (*basic*).
Languages	Portuguese (*native*), English, German, Spanish (*proficient*), Italian, French (*basic*)

References

Nikos K Logothetis, Professor, Max Planck Institute for Biological Cybernetics, nikos.logothetis@tuebingen.mpg.de.

Vikash K Mansinghka, Dr., Massachusetts Institute of Technology, vkm@mit.edu.

Joshua B Tenenbaum, Professor, Massachusetts Institute of Technology, jbt@mit.edu.