Victor J. Barrès

PHD CANDIDATE – USC NEUROSCIENCE

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Highlights

PROGRAMMING	• Python, Matlab-Simulink (Advanced), C/C++ (intermediary). • Javascript, PHP, HTML/CSS (intermediary), SQL (basic). • Git, GitHub, LaTeX, Illustrator.
SKILLS	• Brain Modeling (neural networks, hybrid systems, symbolic A.I), Computational linguistics, Machine learning. • Experiment design and analysis. • Scientific writing (peer reviewed papers, reports), Scientific presentation.
EXPERTISE	Neuro-cognitive modeling, Computational neurolinguistics, Computational construction grammar, Online language-vision interactions, Visual attention, Cognitive linguistics.

Education

PhD in Neuroscience (computational neuroscience) – UNIVERSITY OF SOUTHERN CALIFORNIA, CA	June 2017
MS in Cognitive Science – ECOLE NORMALE SUPERIEURE, FRANCE	June 2010
MS in Physics (particle physics) – ECOLE POLYTECHNIQUE, FRANCE	August 2006
BS in Mathematics and Physics – LYCEE LOUIS LE GRAND, FRANCE	August 2003

Publications

- Arbib, M. A., Gasser, B., & **Barrès, V.** (2014). Language is handy but is it embodied? Neuropsychologia, 55, 57-70.
- **Barrès, V.**, Lee, J. (2014). Template Construction Grammar: from visual scene description to language comprehension and agrammatism. Neuroinformatics, 1-28.
- Vidal, M., **Barrès, V.** (2014). Hearing (rivaling) lips and seeing voices: how audiovisual interactions modulate perceptual stabilization in binocular rivalry. Frontiers in Human Neuroscience, 8.
- Arbib, M. A., **Barrès, V.** (2013). Are Grammatical Constructions Linked to Embodied Meaning Representations? IEEE CIS Autonomous Mental Development Newsletter Fall 2013
- **Barrès, V.**, Simons III, A., & Arbib, M. A. (2013). Synthetic event-related potentials: A computational bridge between neurolinguistic models and experiments. Neural Networks, 37, 66-92.
- Vidal, M., **Barrès, V.**. (2011). How Auditory Information Influences Volitional Control in Binocular Rivalry: Modulation of a Top-Down Attentional Effect. I-Perception, 2(8), 839-839.

Work Experience

Doctoral Researcher, Computational Neuroscience — Sept 10 – Present

USC Brain Project & Action Brain Language Evolution group (ABLE) – UNIVERSITY OF SOUTHERN CALIFORNIA, CA.

- Development of a novel implemented computational construction grammar (CCxG) framework Template Construction Grammar (TCG). In depth comparisons of the theoretical and computational assumptions made by the four major CCxG frameworks (Steel's FCG at Sony, Feldman's ECG at Berkeley, Dominey's DCG at CNRS).
- Development of a implemented cognitive level Schema Architecture Language-Vision InterAction (SALVIA) accounting for the dynamic coordinated interplay between visual attention, language processing, and inference during scene descriptions' production and comprehension.
- Advancing Schema Theory as a Brain Theory model of distributed hybrid computation in a system-of-systems architecture structured according to cognitive(neuroscience) data, where symbolic operations are operationalized by dynamic cooperative computation.
- Co-organizing and participating in 3 NSF founded Action Brain Language and Evolution (ABLE) workshops bringing together researchers from neuroscience, computer science, linguistics, and primatology in order to foster trans-disciplinary exchanges furthering the research on language evolution.

Teaching Assistant — Jan, 13 – June 15

USC Viterbi School of Engineering - Department of Computer Science.

- Brain Theory and Artificial Intelligence (CS 564) (Jan, 13 – June 15).
- Applied Natural Language Processing (CS 544) (Jan, 13 – June 13).

Research Assistant, Psychophysics — Sept 09 – June 10

Laboratory of Physiology of Perception and Action (LPPA) – COLLEGE DE FRANCE, PARIS, FRANCE.

- Designed, ran, analyzed and published a set of psychophysics experiments on the perception of multi-modal, multi-stable stimuli. (Head mounted VR display, experiment coded in Virtools & C, analysis in Matlab & Excel).

Research Assistant, Neuroimaging — June 09 – Aug 09

Gazzaley lab – UNIVERSITY OF CALIFORNIA SAN FRANCISCO, CA.

- Daily ran anatomical and functional MRI scans, EEG recording, motion capture guided TMS (based on anatomical scans). EEG ERP analysis. Experiment design (Matlab, Psychtoolbox).

Honors & Awards

University of Southern California Final Year Dissertation Fellowship.	2016 – 2017
University of Southern California Provost's Ph.D. Fellowship.	2010 – 2014