JAVIER OMAR GARCIA

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As a cognitive neuroscientist, stated broadly, I ascribe function to brain matter. I have integrated current neuroimaging techniques (measuring blood flow, electrical activity, or injected electrical activity into brain) with behavioral measures to understand functional processing of the brain.

Positions

Biologist (12/2015 – present)
US ARMY RESEARCH LABORATORY
Human Research and Engineering Directorate
Future Soldier Technologies Division
Integrated Capability Enhancement Branch
B459 Mulberry Point Rd, Aberdeen Proving Ground, MD 21005

Senior Researcher (09/2014 – 12/2015) *Joint postdoctoral researcher for Army Research Labs and Syntrogi, Inc., investigating brain network dynamics and structure-function coupling as relevant to Army mission needs.*
ARMY RESEARCH LABORATORY
B459 Mulberry Point Rd, Aberdeen Proving Ground, MD 21005
SYNTROGI, INC.
3210 Merryfield Row, La Jolla, CA 92121

Associate Specialist (06/2011 – 07/2014)
UNIVERSITY OF CALIFORNIA, San Diego, California.
Perception and Cognition Laboratory (PI: Serences)
Department of Psychology, 9500 Gilman Dr., La Jolla, CA 92093

Associate Specialist (12/2009-06/2011, 06/2011-12/2014 (WOS))
UNIVERSITY OF CALIFORNIA, Irvine, California.
Human Neuroscience Laboratory (PI: Srinivasan)
Department of Cognitive Sciences, 2201 SBSG, Irvine, CA 92697

Education

UNIVERSITY OF CALIFORNIA, Irvine, California. (09/2004 – 12/2009)
Department of Cognitive Sciences, 2201 SBSG, Irvine, CA 92697
Ph. D. in Cognitive Sciences/Cognitive Neuroscience, Conferred 2009
Dissertation Title: *Investigation of neural computation and circuitry of human visual motion perception.*

UNIVERSITY OF CALIFORNIA, Irvine, California. (09/2004 – 12/2009)
Department of Cognitive Sciences, 2201 SBSG, Irvine, CA 92697
M. A. in Psychology, Conferred 2007.

RICE UNIVERSITY, Houston, Texas. (09/2000 – 05/2004)
6100 Main St., Houston, TX 77005
B. A. in Cognitive Sciences and Psychology, Conferred 2004

Funding

NEI **R21-EY024733** (2014-2016) (Awarded to John Serences (PI))
Role: Co-Investigator
Title: Oscillatory dynamics and sensory processing
Total Direct Costs: $409,613

Forthcoming Publications

Garcia., J., Vettel, J., Brooks, J., Kerick, S., Bigdely-Shamlo, N., Johnson, T., & Mullen, T. (in prep). *Estimating directionality in brain-behavior interactions: Proactive and reactive brain states in driving.*

Current Publications

Schwarz, F., Pearce, O., Wang, X., Samraj, A., Laubli, H., **Garcia, J.,** Garcia-Bingman, A., Secrest, P., Romanoski, C., Heyser, C., Glass, C., Hazen, S., Varki, N., Varki, A., & Gagneux, P. (2015). Siglec receptors impact mammalian lifespan by modulating oxidative stress. *Elife, 4, 06184.*

Ittipuripat, S., **Garcia, J.,** Rungratsameetaweemana, N., Sprague, T., & Serences, J. (2014). Manipulating attention strategy alters patterns of neural gain in human cortex. *Journal of Neuroscience 34(1)*, 112-123.

Itthipuripat, S., **Garcia, J.** & Serences, J. (2013). Temporal dynamics of divided spatial attention*, Journal of Neurophysiology, 109*(9): 2364-2373.

Garcia, J., Srinivasan, R., & Serences, J. (2013). Near-real-time feature-selective responses in human cortex, *Current Biology, 23(6):* 515-522*.*

Garcia, J., Pyles, J., & Grossman, E. (2012). Stimulus complexity modulates contrast response functions in the human middle temporal area (hMT+). *Brain Research*, *1466(23)*: 56-69.

Thorpe, S., Deng, S., **Garcia, J.**, Lee, R., Wang, M., and Srinivasan, R. (2011). Spatial attention enhances steady-state visual evoked responses in the gamma band. *International Journal of Bioelectromagnetism*, *13*(4):233-238.

Garcia, J., Grossman, E., & Srinivasan, R. (2011). Evoked potentials in large-scale cortical networks elicited by TMS of the visual cortex, *Journal of Neurophysiology, 16(4), 1734-1746.*

Garcia, J., & Grossman, E. (2009). Motion opponency and transparency in human middle temporal area (hMT+), *European Journal of Neuroscience, 30,* 1172-1182 *.*

Ro., T., Singhal, N., Breitmeyer, B., & **Garcia, J.** (2009). Unconscious processing of color and form in metacontrast masking*, Attention, Perception, and Psychophysics, 71,* 95-103*.*

Garcia, J., & Grossman, E. (2008). Necessary but not sufficient: motion perception is required for biological motion, *Vision Research, 48(9)*, 1144-1149*.*

Pyles, J., **Garcia, J.**, Hoffman, D., & Grossman, E. (2007). Visual perception and neural correlates of novel 'biological motion', *Vision Research, 47(21),* 2786-2797.

Awards / Prizes

ARL Customer Service Award (2015)
NIH Predoctoral National Research Service Award (*Investigating visual circuitry with simultaneous TMS/EEG,* 2008-2009, **F31-EY01924**)
Travel Fellowship, Center for Vision Science, University of Rochester (2008)
Faculty Mentor Program Fellowship (2006-2007)
Social Sciences Summer Fellowship (2005-2007)
Ford Foundation Predoctoral Diversity Fellowship Honorable Mention (2005)
Graduate Opportunity Fellowship (2004-2005)

Research Skills

Techniques used: psychophysics, fMRI, TMS, fMRI/EEG, MEG/EEG, TMS/EEG, DTI/DSI
With the techniques above, I am expert user of Matlab and its functionality. I use custom scripts and analysis techniques that include but are not limited to blind source seperation, machine learning algorithms, advanced single and multivariate statistics, and signal processing. I am an expert user of linux interfaces, and the more common operating systems (Mac, Windows). Analyses within the publications listed were all analyzed with Matlab as well as some other neuroimaging-specific programs.

Scientific Abstracts

Forthcoming

Muraskin, J., Sherwin, J., Lieberman, G., **Garcia, J.,** Verstynen, T., Vettel, J., & Sajda, P. (June 2016). *Using multimodal neuroimaging to characterize the brains of baseball hitters*. Human Brain Mapping Annual Meeting, Geneva, Switzerland.

Previous

Garcia, J., Vettel, J., Kerick, S., Johnson, T., Bigdely-Shamlo, N., & Mullen, T. (June 2015). *Network connectivity dynamics predicts continuous behavioral measures in a complex visuo-motor task.*

Powell, M., **Garcia, J.,** Bird, C., Tarr, M., Curran, T., & Vettel, J. (June 2015). *EEG classification reveals the temporal dynamics of multisensory processes.* Human Brain Mapping Annual Meeting.

Vettel, J., **Garcia, J.,** Mullen, T., Kerick, S., Bird, C., McDowell, K., Tarr, M., & Curran, T. (June 2015). *Brain networks during multisensory integration of real-world audiovisual events.*

Garcia, J., Kaye, K., Williams, D., Sprague, T., & Serences, J. (May 2014). *The phase of intrinsic oscillations modulates feature and space-based visual attention.* Vision Sciences Society Annual Meeting, St. Petersburg, FL.

Garcia, J., Kaye, K., Sprague, T., & Serences, T. (November 2013). *Near real-time spatial reconstructions of visual stimuli with EEG: Exploring the dynamics of spatial attention.* Society for Neuroscience Annual Meeting, San Diego, CA.

Itthipuripat, S., **Garcia, J.**, Rungratsameetaweemana, N., Sprague, T., & Serences, J. (November 2013). *Manipulating attention strategy alters patterns of neural gain in human cortex.* Society for Neuroscience Annual Meeting, San Diego, CA.

E. Blumenthal, **Garcia, J.**, Williams, D., Carver, L., Serences, J., & Dobkins, K. (November 2013). *Neurological measures of sensory habituation in typically developing adults and infants using an event-related potential technique.* Society for Neuroscience Annual Meeting, San Diego, CA.

Grossman, E., Tyler, S., Hecker, E., & **Garcia, J.** (May 2013). *A data-driven approach to functional connectivity on the STS*. Vision Sciences Society Annual Meeting, Naples, FL.

Williams, D., Blumenthal, E., **Garcia, J.,** Serences, J., Carver, L., & Dobkins, K. (May 2013) *Sensory habituation measures in adults and infants.* Annual Symposium on Cognitive and Language Development, Irvine, CA.

Garcia, J., Srinivasan, R. & Serences, J. (October 2012). *Dynamic tuning functions: a forward encoding model of orientation selectivity with EEG*. Society for Neuroscience Annual Meeting, New Orleans, LA.

Itthipuripat, S., **Garcia, J.,** & Serences, J. (October 2012). *Temporal dynamics of steady-state visual response modulation underlying multifocal spatial attention*. Society for Neuroscience Annual Meeting, New Orleans, LA.

Winter, W., **Garcia, J.,** Huang, M., Srinivasan, R., Thorpe, S. (June 2012). *Variational Bayes Inverse Solution for Simultaneous EEG/MEG*. Organization of Human Brain Mapping Annual Meeting, Beijing, China.

Thorpe, S., Deng, S., **Garcia, J.,** & Srinivasan, R. (April 2012). *Modelling the interaction between distributed spatial attention signals and gamma-band steady-state visual evoked responses in simultaneously recorded EEG/MEG.* Cognitive Neuroscience Society Annual Meeting, Chicago, IL.

Garcia, J., Hecker, E., & Srinivasan, R. (November 2011) *Mapping the temporal frequency dependence of functional networks using frequency-tagging with fMRI-EEG.* Society for Neuroscience Annual Meeting, Washington, DC.

Bridwell, D. **Garcia, J.,** Hecker, E., Serences, J., & Srinivasan, R. (November 2011). *Attention shapes large-scale cortical networks in a frequency specific manner.* Society for Neuroscience Annual Meeting, Washington, DC.

Thurman, S., **Garcia, J.,** & Grossman, E. (May 2011). *Determining the feature sensitivity of visual areas to biological motion using brain-based reverse correlation.,* Vision Sciences Society Annual Meeting, Naples, Florida.

Garcia, J., Hecker, E., Bridwell, D. & Srinivasan, R. (November 2010). *Temporal frequency tuning in non-retinotopic cortex*, Society for Neuroscience Annual Meeting, San Diego, California.

Garcia, J., Grossman, E., & Srinivasan, R. (July 2010). *Widespread oscillations induced by TMS reflect the functional connectivity of the human brain*, Federation of European Neuroscientists Forum, Amsterdam, The Netherlands.

Garcia, J., Grossman, E., & Srinivasan, R. (June 2010). *TMS-induced oscillations of the human brain depend on the functional connectivity of the stimulation site*, Human Brain Mapping Annual Meeting, Barcelona, Spain.

Tyler, S., **Garcia, J.** & Grossman, E. (May 2010). *Attention-based motion analysis of biological motion perception*, Vision Sciences Society Annual Meeting, Naples, FL, USA.

Garcia, J., Srinivasan, R., & Grossman, E. (Nov 2008). *Oscillatory activity induced by single-pulse TMS to visual cortex as measured with simultaneous EEG*, Society for Neuroscience Annual Meeting, Chicago, IL, USA.

Garcia, J., Srinivasan, R., & Grossman, E. (May 2008). *TMS-induced oscillations in orientation discriminations*, Vision Sciences Society Annual Meeting, Naples, FL, USA.

Garcia, J., Pouya, A., & Grossman, E. (August 2007). *Investigation of local motion antagonism with transcranial magnetic stimulation,* European Conference of Visual Perception Annual Meeting, Arezzo, Italy.

Garcia, J., Pyles, J., & Grossman, E. (May 2007). *Neural mechanisms underlying motion opponency in hMT+*, Vision Sciences Society Annual Meeting, Sarasota, FL, USA.

Pyles, J., **Garcia, J.,** & Grossman, E. (May 2007). *fMRI-adaptation for articulated moving objects in ventral temporal brain areas,* Vision Sciences Society Annual Meeting, Sarasota, FL, USA.

Garcia, J., Pyles, J., & Grossman, E. (May 2006). *Neural correlates of degraded complex motion perception*, Vision Sciences Society Annual Meeting, Sarasota, FL, USA.

Pyles, J., **Garcia, J.,** Hoffman, D., & Grossman, E. (May 2006). *Brain activity evoked by the perception of novel biological motion,* Vision Sciences Society Annual Meeting, Sarasota, FL, USA.

Garcia, J., & Grossman, E. (May 2005). *Perception of biological motion at isoluminance.* Vision Sciences Society Annual Meeting, Sarasota, FL, USA.

Burton, P., **Garcia, J.,** & Ro, T. (April 2005). *Spatiotopy in the human frontal eye fields.* Annual Meeting of the Cognitive Neuroscience Society, San Francisco, CA, USA.

Invited Talks

Using encoding models to reconstruct features and locations of objects, Cutting EEG (II), Humboldt University, Berlin, Germany (October 1, 2015).

Defining dynamic functional network with and without visual input, University of California, San Diego, Cognitive Neural Systems Symposium Series (November 1, 2011).

Linking visual psychophysics with simultaneous TMS-EEG, Beaune, France,
Advanced Neurotechnology NeuroMeeting (January 28, 2009).

Neural correlates of degraded complex motion perception, University of California, Irvine, Department of Cognitive Sciences Colloquium Series (May 22, 2006).

Neural mechanisms of complex motion perception, University of California, Irvine, Center for Cognitive Neuroscience Quarterly Meeting (November 3, 2006).

Ad-hoc Reviewer

Chilean National Science and Technology Commission
Frontiers in Psychology
European Journal of Neuroscience
NeuroImage
Cognitive Neuroscience
NSF Grant Agency
French National Research Agency (ANR) "SAMENTA 2011"

Affiliations

American Physiological Association (2011-present)
Society for Neuroscience (2007-present)
Organization for Human Brain Mapping (2010-present)
Federation of European Neurosciences Societies (2010)

Vision Sciences Society (2004-2009, 2012)

Teaching Experience

TEACHING ASSISTANT, UNIVERSITY OF CALIFORNIA IRVINE
Teaching assistant for introductory classes in the cognitive sciences (2004-2009).
Responsibilities include leading discussions, preparing exams, and answering student's questions, a liaison between the students and professor (reviews available).
PSYCH 111B, Research Methods
PSYCH 111C, Research Methods
PSYCH 10C, Probability and Statistics.
PSYCH 160A, Introduction to Cognitive Neuroscience.
PSYCH 9C, Introduction to Psychology.

Other Employment

OLFACTION LABORATORY, RICE UNIVERSITY
Research assistant to Denise Chen, October 2003 – July 2004
Assist Dr. Chen in her research, involving olfactory perception. Responsibilities include running experiments and various other lab activities.

JESSE H. JONES GRADUATE SCHOOL OF MANAGEMENT
Research assistant to Jennifer George, August 2002 – May 2003
Assisted Dr. George in her research (industrial/organizational psychology), regarding creativity in the field of nursing and updating the third edition of *Organizational Behavior*.

Miscellaneous

ARL/AMSAA STEM Expo (2014)
Presented research related to Brain-Computer Interaction research on-going at ARL to High School students within the Aberdeen area.

Center for Cognitive Neuroscience Graduate Student Representative (2007-2009)
Student Representative for UCI's Center for Cognitive Neuroscience

Ask a Scientist (2006, 2007)
Presented research and other psychological phenomena to Hillview Middle School in Whittier, CA.

References

Emily D. Grossman (PhD Advisor)
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Ramesh Srinivasan (Postdoctoral Advisor)
Professor & Chair
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John T. Serences (Postdoctoral Advisor)
Associate Professor
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