Madhur Mangalam

madhur.mangalam@uga.edu | 706.804.1678 | 125 Baldwin St, Athens, GA 30602

EDUCATION

UNIVERSITY OF GEORGIA | Ph.D. Candidate
Behavior and Brain Sciences Program, Department of Psychology
August 2014 – Present | Athens, GA
w/ Prof. Dorothy M. Fragaszy, Prof. Karl M. Newell, & Prof. Dean Sabatinelli

UNIVERSITY OF MYSORE | Research Assistant
Department of Psychology
July 2012 – July 2014 | Mysore, KA, India
w/ Prof. Mewa Singh

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH PUNE | Dual Degree B.S.–M.S.
Life Sciences
August 2007 – May 2012 | Pune, MH, India
w/ Prof. Mewa Singh

RESEARCH INTERESTS

Biomechanics | Human Factors & Tool Use | Motor Control | Perception & Action | Sensorimotor Embodiment

PEER-REVIEWED PUBLICATIONS*

*Names of undergraduate mentees are underlined.

Mangalam, M., Rein, R., & Fragaszy, D. M. Joint synergies and motor skill in nut-cracking in wild monkeys. (In preparation).

Mangalam, M. & Conners, J. D.. Blurred lines and braille: On the interplay of haptic submodalities. (In preparation).

Mangalam, M. & Conners, J. D.. The role of multifractality in perception via dynamic touch. (In preparation).

Mangalam, M., Cutts, S. A., & Fragaszy, D. M. The rubber hand illusion in peripersonal and extrapersonal spaces: Insights about the embodiment of handheld tools. (In preparation).

Mangalam, M., Roles, L. K. R., & Fragaszy, D. M. Shared and distinct perceptuomotor control of stone hammers in humans and wild monkeys. (In preparation.

Mangalam, M. & Conners, J. D.. Multifractality and haptic perceptual invariance. (In preparation).

Mangalam, M. (2018). The biomechanics of multi-joint posture and movement control in wild bearded capuchin monkeys using stone hammers. ***University of Georgia*** Ph.D. Thesis.

Mangalam, M., Conners, J. D., & Singh, T. Muscular effort differentially mediates perception of heaviness and length via dynamic touch. ***Experimental Brain Research*** (Revision under review).

Mangalam, M., Rein, R., & Fragaszy, D. M. Wild bearded capuchin monkeys differentially structure motor variability in the lower and upper limbs while using stone hammers. ***Proceedings of the Royal Society of London B: Biological Sciences*** (Revision under review).

Mangalam, M. Emergent coordination with a brain-machine interface: Implications for the neural basis of motor learning. ***Journal of Neurophysiology*** 120(3), xxx–xxx.

Mangalam, M., Pacheco, M. M., Fragaszy, D. M., & Newell, K. M. Perceptual learning of tooling affordances of a jointed object via dynamic touch. ***Ecological Psychology*** 30(4), xxx–xxx.

Mangalam, M., Conners, J. D., Fragaszy, D. M., & Newell, K. M. (2018). Location of a grasped object's effector influences perception of the length of that object via dynamic touch. ***Experimental Brain Research*** 236(7), 2107–2121.

Mangalam, M. & Fragaszy, D. M. (2018). Reply to "Tool use and dexterity: Beyond the embodied theory." ***Animal Behaviour*** 139, e5–e8.

Fragaszy D. M. & **Mangalam, M.** (2018). Tooling. ***Advances in the Study of Behavior*** 50, 177–241.

Mangalam, M., Wagman, J. B., & Newell, K. M. (2018). Temperature influences perception of the length of a grasped object via effortful touch. ***Experimental Brain Research*** 236(2), 505–516.

Mangalam, M., Pacheco, M. M., Izar, P., Visalberghi, E., & Fragaszy, D. M. (2018). Unique perceptuomotor control of stone hammers in wild monkeys. ***Biology Letters*** 20170587.

Featured in:

The Franklin Chronicles New primate behavior study: Perceiving kinetic energy

Mangalam, M., Barton, S. A., Wagman, J. B., Fragaszy, D. M., & Newell, K. M. (2017). Length of an object perceived through dynamic touch remains invariant across changes in the medium. ***Attention, Perception, & Psychophysics*** 79(8), 2499–2509.

Mangalam, M., Newell, K. M., Visalberghi, E., & Fragaszy, D. M. (2017). Stone-tool use in wild monkeys: Implications for the study of the body-plus-tool system. ***Ecological Psychology*** 29(4), 300–316.

Mangalam, M. (2016). What makes a tool. In Shackelford, T. K. & Weekes-Shackelford, V. A. (Eds.), ***Encyclopaedia of Evolutionary Psychological Science*** (pp. 1–5). New York, NY: Springer.

Mangalam, M. & Fragaszy, D. M. (2016). Transforming the body-only system into the body-plus-tool system. ***Animal Behaviour*** 117, 115–22.

Mangalam, M., Desai, N., & Singh, M. (2016). Division of labor in hand usage: A democratic approach to explaining manual asymmetries in non-human primates. ***Current Science*** 110(9), 1630–1638.

Karve, S. M. & **Mangalam, M.** (2016). Junior researchers: Hasty publication compromises rigour. ***Nature*** 531(7594), 305.

Mangalam, M., Izar, P., Visalberghi, E., & Fragaszy, D. M. (2016). Task-specific temporal organization of percussive movements in wild bearded capuchin monkeys. ***Animal Behaviour*** 114, 129–137.

Featured in:

Animal Behaviour On tool use, and becoming human

Journal of Experimental Biology Monkeys alter tool use for different tasks

Classen, D., Kiessling, S. E., **Mangalam, M.**, Kaumanns, W., & Singh, M. (2016). Fission-fusion species under restricted housing conditions: A comparative study of inter-individual interactions and physical proximity in captive bonobos and Bornean orangutans. ***Current Science*** 110, 139–150. *Cover Page Article

Mangalam, M., Desai, N., & Singh, M. (2016). Self-organization of laterally asymmetric movements as a consequence of space-time optimization. ***Journal of Theoretical Biology*** 390, 50–60.

Zaunmair, P., **Mangalam, M.**, Kaumanns, W., Singh, M., & Slotta-Bachmayr, L. (2015). Patterns of dominance relationships among the females of a captive female-only group of lion-tailed macaques (*Macaca silenus*) during the course of the introduction of a new adult male. ***Current Science*** 109(4), 803–807.

Featured in:

Current Science Society of lion-tailed macaques

Mangalam, M. & Fragaszy, D. M. (2015). Quantifying affordances. In Weast-Knapp, J., Malone, M., & Abney, D. (Eds.), ***Studies in Perception and Action XIII*** (pp. 199–202). New York, NY: Psychology Press.

Mangalam, M. & Karve, S. M. (2015). Comment on "Number-space mapping in the newborn chick resembles humans' mental number line." ***Science*** 348(6242), 1438–b.

Mangalam, M. & Fragaszy, D. M. (2015). Wild bearded capuchin monkeys crack nuts dexterously. ***Current Biology*** 25(10), 1334–1339.

Featured in:

BBC Radio	Monkey nuts
Daily Mail	This is how you should be cracking nuts!
Der Spiegel	Raffinierte technik: So knacken affen nüsse
Discovery News	Monkeys show how to perfectly crack a nut
EurekaAlert!	Wild bearded capuchin monkeys really know how to crack a nut
Huffington Post	Clever monkey demonstrates the proper way to crack a nut
Live Science	Nut-cracking monkeys show humanlike skills
Mental Floss	These monkeys wield makeshift hammers and anvils
National Geographic	Nut-bashing monkeys offer window into human evolution
Nature World News	These nut cracking monkeys would make great blacksmiths - use a hammer and anvil with deft
New Scientist	Capuchin monkeys rival chimps as highly skilled nut-crackers
Pacific Standard	Monkeys with talented hands
Science News	Rock-wielding monkeys make adjustments when cracking nuts
Science Shot	Clever monkeys adjust how hard they hammer nuts
The New York Times	Monkeys provide clues to how tool use developed

Mangalam, M., Desai, N., & Singh, M. (2015). Division of labor in hand usage is associated with higher hand performance in free-ranging bonnet macaques, *Macaca radiata*. ***PLoS ONE*** 10(3), e119337.

Nettimi, R. P., **Mangalam, M.**, & Singh, M. (2015). Why not be an early bird researcher? ***Current Science*** 108(6), 1027–1028.

Featured in:

The Indian Express	Education system does not foster the spirit of inquiry

Sfar, N., **Mangalam, M.**, Kaumanns, W., & Singh, M. (2014). A comparative assessment of hand preference in captive red howler monkeys, *Alouatta seniculus* and yellow-breasted capuchin monkeys, *Sapajus xanthosternos*. ***PLoS ONE*** 9(10), e107838.

Mangalam, M., Desai, N., & Singh, M. (2014). Do right-handed monkeys use the right cheek pouch before the left? ***PLoS ONE*** 9(5), e97971.

Mangalam, M., Desai, N., & Singh, M. (2014). Division of labor in hand usage in free-ranging bonnet macaques, *Macaca radiata*. ***American Journal of Primatology*** 76(6), 576–585.

Mangalam, M. & Singh, M. (2013). Flexibility in food extraction techniques in urban free-ranging bonnet macaques, *Macaca radiata*. ***PLoS ONE*** 8(12), e85497.

Mangalam, M. & Singh, M. (2013). Differential foraging strategies: Motivation, perception and implementation in urban free-ranging dogs, *Canis familiaris*. ***Animal Behaviour*** 85(2), 763–770.

Mangalam, M. & Singh, M. (2013). Sex and reproductive state influence the rate of resource acquisition and monopolisation in urban free-ranging dogs, *Canis familiaris*. ***Behaviour*** 150(4), 199–213.

Mangalam, M. (2012). Strategies in novel food extraction tasks and responses to perceived threats in urban free-ranging dogs, *Canis familiaris*. ***IISER Pune*** Master's Thesis.

Das, S., Dutta, S., **Mangalam, M.**, Verma, R., Rath, S., Singh, M., & Kumara, H. (2011). Prioritizing remnant forests for the conservation of Mysore slender lorises (*Loris lyddekerianus lyddekerianus*) in Karnataka, India through estimation of population density. ***International Journal of Primatology*** 32(5), 1153–1160.

Featured in:

The Hindu	Loris clings on precariously here
The Times of India	Study moots conservation of slender loris' habitat

RESEARCH FUNDING

2017–19 **Committee for Research and Exploration, National Geographic Society | USD 29,226** WW-051R-17
"Nut-cracking in wild bearded capuchin monkeys: Patterns of coordination in movements"
w/ Dorothy M. Fragaszy, Patrícia Izar, & Elisabetta Visalberghi

2016 **Innovative and Interdisciplinary Research Grant | USD 1,000**
Graduate School, University of Georgia

PUBLISHED ABSTRACTS

Mangalam, M. (2018). Haptic perception in motor control, at land, in water, in air, and in space, of a fish's fin, a flamingo's neck, a monkey's tail, a snake's spine, and a bat's wing. ***Integrative & Comparative Biology*** 58(suppl_1), e143.

Mangalam, M. & Fragaszy, D. M. (2018). Joint synergies in nut cracking in wild bearded capuchin monkeys. ***Integrative & Comparative Biology*** 58(suppl_1), e371.

Mangalam, M., Matheus, M. M., & Fragaszy, D. M. (2017). How wild bearded capuchin monkeys crack nuts. ***Integrative & Comparative Biology*** 57(suppl_1), e337.

Mangalam, M., Roles, L. K. R., & Fragaszy, D. M. (2017). Wild bearded capuchin monkeys outperform humans in cracking nuts. ***Integrative & Comparative Biology*** 57(suppl_1), e104.

Mangalam, M. & Fragaszy, D. M. (2016). Embodied foundations of stone tool use shared by humans and bearded capuchin monkeys. ***American Journal of Physical Anthropology*** 159(S62), 218.

Mangalam, M. & Fragaszy, D. M. (2015). Wild bearded capuchin monkeys crack nuts dexterously. ***Proceedings of the XVIII International Conference on Perception–Action*** 86.

ORAL PRESENTATIONS

2018 **International Society for Ecological Psychology** Normal, IL | June 27–28
Wild monkeys structure motor variability to stand bipedally while using stone hammers.

2018 **Department of Organismal Biology and Anatomy, University of Chicago** Chicago, IL | March 12
What stone tool using wild monkeys can tell us about prehistoric toolmakers and cyborgs.

2018 **Society for Integrative & Comparative Biology** San Francisco, CA | Jan 3–7
Haptic perception in motor control, at land, in water, in air, and in space, of a fish's fin, a flamingo's neck, a monkey's tail, a sna

2017 **American Society for Primatologists** Washington, DC | Aug 25–28
Identifying distinguishing features of perceptuomotor control of stone tools in humans and bearded capuchin monkeys.

2017 **7th Annual Graduate Students & Postdocs in Science Day**, University of Georgia, Athens, GA | April 17
Perceptual-motor control of stone tools in wild monkeys: Implications for the origins of stone-tool manufacture in hominins.

2017 **40th Annual Psi Chi Convention**, University of Georgia, Athens, GA | April 14
Perceptual-motor control of stone tools in wild monkeys: Implications for the origins of stone-tool manufacture in hominins.

2017 **Society for Integrative & Comparative Biology** New Orleans, LA | Jan 4–8
How wild bearded capuchin monkeys crack nuts.

2016 **International Society for Ecological Psychology** Clemson, SC | June 20–22
Biomechanical analysis of the affordances of anvil-and-hammer tools in wild bearded capuchin monkeys.

2016 **American Association of Physical Anthropologists** Atlanta, GA | April 13–16
Embodied foundations of stone tool use shared by humans and bearded capuchin monkeys.

2015 **XVIII International Conference on Perception–Action** Minneapolis, MN | July 14–18
Wild bearded capuchin monkeys crack nuts dexterously.

POSTER PRESENTATIONS

2018 **International Society for Ecological Psychology** Normal, IL | June 27–28
Point of percussion influences perception of the length of a wielded object via dynamic touch by striking.

2018 **Society for the Neural Control of Movement** Santa Fe, NM | April 30–May 4
Wild monkeys structure motor variability to maintain a stable bipedal stance while using stone hammers.

2018 **Society for Integrative & Comparative Biology** San Francisco, CA | Jan 3–7
Joint synergies in nut cracking in wild bearded capuchin monkeys.

2017 **Society for Integrative & Comparative Biology** New Orleans, LA | Jan 4–8
Wild bearded capuchin monkeys outperform humans in cracking nuts.

2016 **International Society for Ecological Psychology** Clemson, SC | June 20–22
Wild bearded capuchin monkeys use their semi-prehensile tail as a cantilever of adjustable length.

2015 **XVIII International Conference on Perception–Action** Minneapolis, MN | July 14–18
Quantifying affordances.

PROFESSIONAL MEMBERSHIPS

International Society for Ecological Psychology (ISEP) | Society for Integrative and Comparative Biology (SICB) | Society for the Neural Control of Movement (NCM)

AD-HOC REVIEWERSHIPS

Animal Cognition | *Behavioural Processes* | *Behavioural Brain Research* | *Biology Letters* | *Current Science* | *Journal of Biosciences* | *Journal of Comparative Psychology* | *Nature*

AWARDS, FELLOWSHIPS, & GRANTS

2018 **Departmental Teaching Assistantship | USD 15,642**
Department of Psychology, University of Georgia

2018 **Graduate School Travel Grant | USD 775**
Graduate School, University of Georgia

2017–18 **Departmental Teaching Assistantship | USD 21,660**
Department of Psychology, University of Georgia

2017 **Graduate School Travel Grant | USD 775**
Graduate School, University of Georgia

2017 **Walter Isaac Travel Award | USD 300**
Department of Psychology, University of Georgia

2016–17 **Departmental Teaching Assistantship | USD 18,696**
Department of Psychology, University of Georgia

2016 **Departmental Teaching Assistantship | USD 2,268**
Department of Psychology, University of Georgia

2016 **Walter Isaac Travel Award | USD 300**
Department of Psychology, University of Georgia

2015–16 **Departmental Teaching Assistantship | USD 18,144**
Department of Psychology, University of Georgia

2015 **Honorary Domestic Travel Assistance | INR 11,000**
Biopsychology Laboratory, University of Mysore

2015 **Foreign Travel Assistance | USD 1,850**
OVPR, University of Georgia

2015 **Walter Isaac Travel Award | USD 300**
Department of Psychology, University of Georgia

2015 **Outstanding Publication Award**
Department of Psychology, University of Georgia

2014–15 **Ph.D. Scholars of Excellence Assistantship | USD 21,000**
Department of Psychology, University of Georgia

2015 **Education Related Travel Grant | INR 40,000**
Sir Dorabji Tata Trust, India

2007–12 **Inspire Fellowship | INR 287,500**
Department of Psychology, University of Georgia

2010 **Summer Research Fellowship | INR 12,000**
Indian Academy of Sciences, India

2010 **Spirit of Invention Award | INR 5,000**
National Chemical Laboratory, India

TEACHING EXPERIENCE

RESEARCH ANALYSIS IN PSYCHOLOGY | Teaching Assistant
August 2018 – December 2018 | University of Georgia

COGNITIVE NEUROSCIENCE | Instructor of Record
July 2018 | University of Georgia

RESEARCH ANALYSIS IN PSYCHOLOGY | Teaching Assistant
January 2018 – May 2018 | University of Georgia

ANIMAL COGNITION & PERCEPTION | Guest Lecturer
March 2018 | University of Georgia

SENSATION & PERCEPTION | Guest Lecturer
October 2017 | University of Georgia

RESEARCH DESIGN IN PSYCHOLOGY | Teaching Assistant
August 2017 – December 2017 | University of Georgia

COGNITIVE PSYCHOLOGY | Teaching Assistant
Jan 2017 – May 2017 | University of Georgia

PHYSIOLOGICAL & COMPARATIVE PSYCHOLOGY | Teaching Assistant
August 2016 – December 2016 | University of Georgia

PSYCHOPHARMACOLOGY | Teaching Assistant
June 2016 – July 2016 | University of Georgia

ANIMAL COGNITION | Guest Lecturer
January 2016 – May 2016 | University of Georgia

ELEMENTARY PSYCHOLOGY | Teaching Assistant
August 2015 – May 2016 | University of Georgia

STATISTICS | Guest Lecturer
January 2013 – May 2013 | University of Mysore

EVOLUTION | Guest Lecturer
August 2012 – December 2012 | University of Mysore

UNDERGRADUATE MENTORSHIP

2018 **Sarah Cutts**
Psychology & Neuroscience Major, University of Georgia

2018 **Pakeeza A. Hafeez**
Psychology & Biology Major, University of Georgia

2017–18 **James D. Conners**
Psychology & Communications Major, University of Georgia

James' research with me fetched him ***William T. James Award*** given to an Outstanding Senior Major in Psychology

2017 **Carlos R. Corea**
Linguistics & Psychology Major, University of Georgia

2017 **Lillian A. Stamps**
Psychology Major, University of Georgia

2017 **Tinikki C. Gibbs**
Psychology Major, University of Georgia

2016 **Sophie A. Barton**
Psychology & Neuroscience Major, University of Georgia

2015–16 **Ashley Myers**
Biology & Psychology Major, University of Georgia

2015–16 **Hiba Hafeez**
Psychology Major, University of Georgia

2015–16 **Lindsey K. R. Roles**
Psychology & Neuroscience Major, University of Georgia

2015 **James Y. Hammers**
Psychology Major, University of Georgia

2015 **Leslea G. Motley**
Psychology Major, University of Georgia

2012–15 **Ravindra P. Nettimi**
Biology Major, Indian Institute of Science Education and Research Pune

2012–15 **Nisarg Desai**
Biology Major, Indian Institute of Science Education and Research Pune

REFEREES

DOROTHY M. FRAGASZY | Professor
Psychology, University of Georgia
doree@uga.edu | 706.338.3859 | 125 Baldwin St, Athens, GA 30602, USA

KARL M. NEWELL | Professor
Kinesiology, University of Georgia
kmn1@uga.edu | 814.571.1812 | 110 Carlton St, Athens, GA 30602, USA

DEAN SABATINELLI | Associate Professor
Psychology, University of Georgia
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PATRÍCIA IZAR | Professor
Experimental Psychology, University of São Paulo
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MEWA SINGH | Life-Long Distinguished Professor
Psychology, University of Mysore
msingh@psychology.uni-mysore.ac.in | +91 944.860.3506 | Manasagangotri, Mysore, KA 570006, India

SUTIRTH DEY | Associate Professor
Indian Institute of Science Education and Research Pune
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