

# Madhur Mangalam

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## EDUCATION

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### UNIVERSITY OF GEORGIA | PH.D. CANDIDATE, 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.

August 2007 – May 2012 | Pune, MH, India

w/ Prof. Mewa Singh

## RESEARCH INTERESTS

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

## PEER-REVIEWED PUBLICATIONS\*

\*Names of undergraduate mentees are underlined>.

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**Mangalam, M.** Perceptuomotor embodiment of tools. (In preparation).

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

**Mangalam, M.**, Rein, R., & Fragaszy, D. M. Freed hands and engaged feet in stone tool using wild monkeys. (In preparation).

**Mangalam, M.**, Conners, J. D., Wagman, J. B., Fragaszy, D. M., & Newell, K. M. Location of a grasped object's effector influences perception of the length of that object via effortful touch. (In preparation).

**Mangalam, M.** & Fragaszy, D. M. Reply to "Tool use and dexterity: Beyond the embodied theory." *Animal Behavior* (Under review).

**Mangalam, M.**, Pacheco, M. M., Fragaszy, D. M., & Newell, K. M. Perceptual learning of the affordances of a jointed tool. *Ecological Psychology* (Under review).

**Mangalam, M.**, Roles, L. K. R., & Fragaszy, D. M. Shared and distinct perceptuomotor control of stone hammers in humans and wild monkeys. *Journal of Human Evolution* (Under review).

Fragaszy D. M. & **Mangalam, M.** (2018). Tooling. *Advances in the Study of Behavior* (In press).

**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), 000–000.

**Mangalam, M.**, Pacheco, M. M., Izar, P., Visalberghi, E., & Fragaszy, D. M. (2017). Unique perceptuomotor control of stone hammers in wild monkeys. *Biology Letters* 20170587.

**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 lydekerianus lydekerianus*) 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 FUNDINGS

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2017–18 **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

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**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), e000.

**Mangalam, M.** & Fragaszy, D. M. (2018). Joint synergies in nut cracking in wild bearded capuchin monkeys. **Integrative & Comparative Biology** 58(suppl\_1), e000.

**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

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- 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 snake's tongue.
- 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

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- 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

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International Society for Ecological Psychology (ISEP) | Society for Integrative and Comparative Biology (SICB)

## AD-HOC REVIEWERSHIPS

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

## AWARDS, FELLOWSHIPS, & GRANTS

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- 2018 **Graduate School Travel Grant | USD 775**  
Graduate School, University of Georgia
- 2017-18 **Departmental Teaching Assistantship | USD 19,253**  
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

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### RESEARCH ANALYSIS IN PSYCHOLOGY | TEACHING ASSISTANT

January 2018 – May 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**

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

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**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  
sabat@uga.edu | 706.542.3094 | 125 Baldwin St, Athens, GA 30602, USA

**PATRÍCIA IZAR | PROFESSOR**

Experimental Psychology, University of São Paulo  
patrizar@usp.br | +55 11.091.4358 | Av. Professor Mello Moraes, 1721 Butantã, São Paulo, SP 05508-030, Brazil

**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**

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