

Madhur Mangalam, Ph.D.

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STATEMENT OF RESEARCH INTERESTS

As a biomechanist and statistician, my research focuses on the nonlinear variability of human movement, emphasizing how localized impairments—such as chronic ankle instability, knee osteoarthritis, or neurological deficits—cascade through the body's movement system. By integrating nonlinear dynamics, network science, and ecological experimental designs, I aim to uncover the complex interplay between local dysfunctions and global coordination patterns. My work spans multiple physiological systems, from postural balance and gait stability to cardiac physiology, with a translational goal of developing robust, data-driven rehabilitation strategies. To achieve this, I develop multiscale analytical methods that quantify physiological complexity and validate them through both simulations and real-world data.

Currently, my research program is structured around three primary projects: (i) network-based analyses of whole-body coordination to quantify aging-related movement fragmentation, (ii) sensor-equipped wobble boards for adaptive balance training, and (iii) an advanced ECG analysis algorithm that extends beyond conventional R-peak detection. Each of these projects leverages multimodal data collection—including stabilography, motion capture, EMG, and physiological monitoring—combined with sophisticated analytical frameworks.

Keywords: *Biomechanics | Embodied Cognition | Ergodic Theory | Fractal/Multifractal Analysis | Human Factors & Tool Use | Motor Control | Movement Science | Multiscale Analysis | Multiplicative Cascade Processes | Nonlinear Dynamics | Perception & Action | Posture | Proprioception | Rehabilitation | Sensorimotor Neuroscience*

BIBLIOGRAPHY

PubMed
Open Researcher and Contributor ID (ORCID)
Google Scholar
ResearchGate

WORK EXPERIENCE

UNIVERSITY OF NEBRASKA AT OMAHA | Tenure-Track Assistant Professor
Department of Biomechanics
01 January 2023 – Present | Omaha, NE

UNIVERSITY OF NEBRASKA AT OMAHA | Courtesy Appointment
Department of Neuroscience
01 February 2023 – Present | Omaha, NE

UNIVERSITY OF NEBRASKA AT OMAHA | Research Associate
Nonlinear Analysis Core, Department of Biomechanics
01 August 2022 – 31 December 2023 | Omaha, NE

NORTHEASTERN UNIVERSITY | Postdoctoral Research Associate
Movement Neuroscience Laboratory, Department of Physical Therapy, Movement and Rehabilitation Sciences
07 January 2019 – 31 July 2022 | Boston, MA
w/ Prof. Eugene Tunik

UNIVERSITY OF GEORGIA | Temporary Technical/Paraprofessional
Department of Psychology
28 January 2019 – 26 February 2019 | Athens, GA
w/ Prof. Dorothy M. Frigaszy

UNIVERSITY OF MYSORE | Research Assistant

Department of Psychology
11 July 2012 – 31 July 2014 | Mysore, KA, India
w/ Prof. Mewa Singh

EDUCATION

UNIVERSITY OF GEORGIA | Ph.D.

Behavior and Brain Sciences Program, Department of Psychology

18 August 2014 – 12 December 2018 | Athens, GA

Dissertation: The biomechanics of multi-joint posture and movement control in wild bearded capuchin monkeys using stone hammers.

w/ Prof. Dorothy M. Fragaszy, Prof. Karl M. Newell, & Prof. Dean Sabatinelli

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH PUNE | Dual Degree B.S.–M.S. Life Sciences

20 August 2007 – 15 May 2012 | Pune, MH, India

Thesis: Strategies in novel food extraction tasks and responses to perceived threats in urban free-ranging dogs, *Canis familiaris*.

w/ Prof. Mewa Singh

FUNDED RESEARCH PROPOSALS

2024–25 **First Award, Nebraska EPSCoR | USD 25,000**

“Investigating the impact of wobble board exercises on long-latency postural reflexes in older adults”

Role: PI

2024–25 **Great Plains IDeA-CTR, | USD 10,000**

“Augmented Reality (AR)-mediated gait entrainment to prevent falls in older adults”

Role: PI

2024–25 **University Committee on Research and Creative Activity (UCRCA) | USD 10,000**

“Harnessing non-Gaussian patterns in HRV: Precision forecasting of cardiovascular diseases”

Role: PI

2023–24 **COBRE Junior Investigator, National Institute of General Medical Sciences (NIGMS) | 5P20GM109090-10 | USD 175,606**

“Network analysis of bodywide coordination supporting suprapostural dexterity”

Role: PI

2020–21 **Facebook Technologies LLC | USD 79,423**

“Virtual reality and neuroplasticity”

Role: Co-I (PI: Eugene Tunik; Co-I Mathew Yarossi)

2017–19 **Committee for Research and Exploration, National Geographic Society | WW-051R-17 | USD 29,226***

“Nut-cracking in wild bearded capuchin monkeys: Patterns of coordination in movements”

Role: Co-I (PI: Dorothy M. Fragaszy; Co-Is: Patricia Izar & Elisabetta Visalberghi)

**UGA policy does not permit graduate students to serve as PIs*

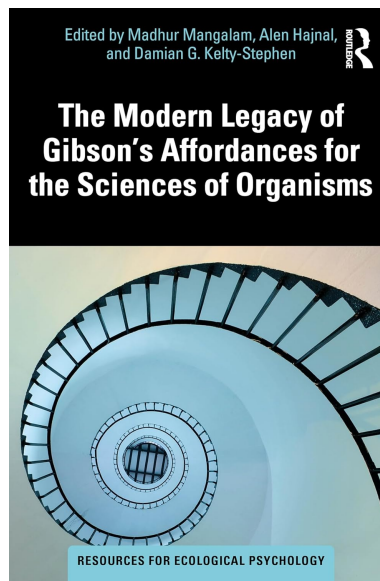
2016 **Innovative and Interdisciplinary Research Grant | USD 1,000**

Graduate School, University of Georgia

PENDING RESEARCH PROPOSALS

- 2025-26 **University of Nebraska Collaborative Initiative | USD 99,998**
“Evidence-based design of wobble boards to enhance postural long-latency reflexes in fall-prone older adults”
Role: PI (Co-I: Ka-Chun (Joseph) Siu)
- 2025-26 **Great Plains IDeA-CTR | USD 100,000**
“Investigating the impact of wobble board exercises on long-latency postural reflexes in older adults”
Role: PI (Co-I: Nick Stergiou)
- 2025-28 **R15, National Institute of General Medical Sciences | USD 542,313**
“Decoding age-related changes in suprapostural coordination through network analysis”
Role: PI (Co-Is: David Kingston, Janelle Beadle, & Sara A. Myers)
- 2025-28 **R15, National Institute of Aging | USD 529,671**
“Reducing fall risk in older adults by restoring gait variability through an augmented reality (AR)-based virtual walking companion”
Role: PI (Co-Is: Aaron D. Likens & Nick Stergiou)
- 2025-28 **R16, National Institute of General Medical Sciences | USD 720,098**
“Non-Gaussian HRV as a biomarker for cardiac health and mortality risk”
Role: PI (Co-I: Nick Stergiou)

EDITED BOOKS



Mangalam, M., Barrett, L., & Kelty-Stephen, D. G., Eds. (2025, in works). Bridging the Mind-Body Divide: Objectives, Methodologies, and Foundations of Embodied Cognition.

Kelty-Stephen, D. G. & **Mangalam, M.**, Eds. (2025, in press). Beyond the Computer Metaphor of Mind and Brain. Cambridge University Press, Cambridge, UK.

Mangalam, M., Hajnal, A., & Kelty-Stephen, D. G., Eds. (2024). The Modern Legacy of Gibson's Affordances for the Sciences of Organisms. Routledge, New York, NY.

MANUSCRIPTS IN PIPELINE

Mangalam, M., Scarr, G., & Kelty-Stephen, D. G. (2025). Nonlinear modeling strategies to explain and predict variability in human performance. (In preparation).

Kelty-Stephen, D. G. & **Mangalam, M.** (2025). How big is an action? (In preparation).

Mangalam, M. & Kelty-Stephen, D. G. (2025). Beyond the sensor data deluge: Developing individualizable, generalizable, and reproducible digital biomarkers of physical, mental, and communal health. (In preparation).

Sadri, A., Hasselman, F., Kelty-Stephen, D. G., & **Mangalam, M.** (2025). Challenging sample size, confidence interval, and effect size: The impact of unexamined independence on reproducibility and generalizability. (In preparation).

Kelty-Stephen, D. G. & **Mangalam, M.** (2025). Turbulent pupil dilation and cognitive insight. (In preparation).

Li, L., **Mangalam, M.**, & Kiyono, K. (2025). Accurate pediatric obesity and thinness evaluation using height-adjusted body mass. (In preparation).

Van Gelder, L., Styles, R., **Mangalam, M.**, Alderink, G., Atkins, P., & Wilson, D. S. (2025). Evolving rehabilitation strategies for movement and pain: A multilevel evolutionary and complex systems perspective. (In preparation).

Mangalam, M. and Kelty-Stephen, D. G. (2025). Turbulent dynamics in whole-body functional coordination networks. (In preparation).

Mangalam, M. & Kelty-Stephen, D. G. (2025). Multifractal nonlinearity exposes the intricacies of noise and interactions in cascade dynamics underlying biological and psychological processes hidden by monofractal estimates. (In preparation).

Mangalam, M., Barfi, M., & Schlattmann, B. (2025). LONG-STANCE: A 30-minute multimodal dataset of standing balance across the adult lifespan. *Nature Scientific Data* (Under review).

Mangalam, M., Barfi, M., & Schlattmann, B. (2025). A multimodal dataset of suprapostural coordination in healthy older adults. *Nature Scientific Data* (Under review).

Mangalam, M., Kiyono, K., & Kelty-Stephen, D. G. (2025). Fractal characteristics of balance acquisition on wobble board. (In preparation).

Kelty-Stephen, D. G. & **Mangalam, M.** (2025). Wobble boards accentuate postural adaptations through bodywide coordination. (In preparation).

Kiyono, K., Hiroya, K., Fujimoto, Y., Lee, S., Ohtsu, H. & **Mangalam, M.** (2025). q -algebraic interpretation of mean-variance correlation in stochastic time series. (In preparation).

Mangalam, M. & Kelty-Stephen, D. G. (2025). Network analysis reveals adaptations in bodywide movement coordination across the lifespan and stroke. (In preparation).

Mangalam, M. & Jaffri, A. H. (2025). Understanding stability, resilience, and robustness in motor control: A network-based approach to balance and rehabilitation. (In preparation).

Mangalam, M. & Kelty-Stephen, D. G. (2025). Dissociable effects of cognitive and mechanical perturbations on stability, resilience, and robustness of whole-body coordination network. (In preparation).

Deligiannis, T., Kelty-Stephen, D. G., & **Mangalam, M.** (2025). Characterizing proactive and emergent balance control using wobble board dynamics. (In preparation).

Mangalam, M. & Kelty-Stephen, D. G. (2025). Multifractal cascade modeling reveals fundamental limits of current neuroimaging strategies. (In preparation).

Kelty-Stephen, D. G. & **Mangalam, M.** (2025). Constrained interactions and *under-fractality* in multiscale systems. *Physical Review E* (Under review).

Similton, O., **Mangalam, M.**, & Kelty-Stephen, D. G. (2025). Multifractal bodily movement supports visuospatial memory under auditory fractal stimulation. *Journal of the Royal Society Interface* (Under review).

Mangalam, M. (2025). Multiscale modeling reveals when dynamic grouping outperforms fixed assignment clinical trial designs. (In preparation).

Mangalam, M. (2025). AI-driven dynamic grouping for adaptive clinical trials: Rethinking randomization in precision medicine. (In preparation). *Frontiers in Digital Health* (Under review).

Mangalam, M. (2025). Enhanced stochastic resonance in attention network switching under sleep deprivation. *Biological Cybernetics* (Under review).

Mangalam, M. & Kelty-Stephen, D. G. (2025). Network analysis reveals the path to recovery after arthroplasty for unilateral total hip osteoarthritis. *npj Exercise Medicine and Health* (Under review).

Kelty-Stephen, D. G., **Mangalam, M.**, Guillaume, M., & Cédric, B. T. (2025). Whole-body multifractal synergies support cognitive visual word search. *Ecological Psychology* (Under review).

Mangalam, M., Deligiannis, T., Barfi, M., Schlattmann, B., Pacheco, M. M., & Kelty-Stephen, D. G. (2025). Mechanical and cognitive postural challenges drive shifts in whole-body coordination networks. *PNAS NEXUS* (Under review).

Mangalam, M., Kelty-Stephen, D. G., Barfi, M., Deligiannis, T., Schlattmann, B., Likens, A. D., Kiyono, K., & Stergiou, N. (2025). Aging strengthens the responsivity of the postural center of pressure to changes in the center of mass. *Journal of the Royal Society Interface* (Under review).

Kelty-Stephen, D. G., Deligiannis, T., Fujimoto, Y., Kiyono, K., & **Mangalam, M.** (2025). Wobble board instability enhances proactive postural control. *Journal of the Royal Society Interface* (Under review).

Fujimoto, Y., **Mangalam, M.**, & Kiyono, K. (2025). Scaling profiles: A novel diagnostic approach for enhanced characterization of heart rate variability in cardiac pathologies. *Nature Scientific Reports* (Under review).

PEER-REVIEWED RESEARCH ARTICLES*

*Undergraduate mentees.

Likens, A. D., **Mangalam, M.**, Wong, A., Charles, A. E., & Mills, C. (2025). Better than Detrended Fluctuation Analysis? A Bayesian method for estimating the Hurst exponent in behavioral sciences. *Psychological Methods* (In press).

Mangalam, M., Barfi, M., Deligiannis, T., & Schlattmann, B. (2025). A multimodal biomechanical and eye-tracking dataset of suprapostural coordination in healthy young adults. *Nature Scientific Data* (In press).

Deligiannis, T. & **Mangalam, M.** (2025). Geometric principles of wobble board design for balance training and rehabilitation. *Nature Scientific Reports* (In press).

Mangalam, M., Sommerfeld, J., Wilson, T., & Likens, A. (2025). Optimizing a Bayesian method for estimating the Hurst exponent in behavioral sciences. *Axioms* (In press).

Mangalam, M. & Likens, A. (2025). Precision in brief: Bayesian Hurst-Kolmogorov method for assessing long-range correlations in short behavioral time series. *Entropy* 27(5), 500.

Fujimoto, Y., **Mangalam, M.**, & Kiyono, K. (2025). Enhanced scaling crossover detection in long-range correlated time series. *Chaos, Solitons & Fractals: X* 14, 100125.

Mangalam, M., Likens, A., & Kelty-Stephen, D. G. (2025). Multifractal nonlinearity as a robust indicator of multiplicative cascade dynamics. *Physical Review E* 111, 034126.

Furmanek, M. P., Schettino, L. F., Yarossi, M., **Mangalam, M.**, Lockwood, K., Adamovich, S. V., & Tunik, E. (2025). Frontoparietal involvement in online updating of reach-to-grasp to mechanical perturbations of hand transport. *Journal of Neuroscience* 45(12), e0173242025.

Mangalam, M., Kelty-Stephen, D. G., Kiyono, K. & Stergiou, N. (2025). Corrigendum to "Spatial variability and directional shifts in postural control in Parkinson's disease" [Clin. Parkinsonism Relat. Disord. (2024) 10, 100249]. *Clinical Parkinsonism & Related Disorders* 12, 100308.

Wiles, T. M., Kim, S. K., **Mangalam, M.**, Sommerfeld, J. H., Brink, K. J., Grunkemeyer, A., Manifrenti, M. K., Charles, A. E., Shakerian, N., Haghighatnejad, M., Mastorakis, S., Stergiou, N., & Likens, A. D. (2025). NONAN GaitPrint: An IMU gait database of healthy older adults. *Nature Scientific Data* 12, 143.

Schlattmann, B., Kiyono, K., Kelty-Stephen, D. G., & **Mangalam, M.** (2025). Angular distribution of fractal temporal correlations supports adaptive responses to wobble board instability. *Journal of The Royal Society Interface* 22, 20240664.

Deligiannis, T., Barfi, M., Schlattmann, B., Kiyono, K., Kelty-Stephen, D. G., & **Mangalam, M.** (2024). Selective engagement of long-latency reflexes in postural control through wobble board training. *Nature Scientific Reports* 14, 31819.

Mangalam, M., Seckler, H., & Kelty-Stephen, D. G. (2024). Machine-learning classification with additivity and diverse multifractal pathways in multiplicativity. *Physical Review Research* 6(3), 033276.

Mangalam, M., Isoyama, Y., Ogata, H., Nose-Ogura, S., Kayaba, M., Nagai, N., & Kiyono, K. (2024). Multi-scaling allometry in human development, mammalian morphology, and tree growth. *Nature Scientific Reports* 14, 19957.

Mangalam, M. & Kelty-Stephen, D. G. (2024). Multifractal perturbations to multiplicative cascades promote multifractal

nonlinearity with asymmetric spectra. **Physical Review E** 109(6), 064212.

Mangalam, M., Kelty-Stephen, D. G., Kiyono, K. & Stergiou, N. (2024). Spatial variability and directional shifts in postural control in Parkinson's disease. **Clinical Parkinsonism & Related Disorders** 10, 100249.

Isoyama, Y., Nose-Ogura, S., Ijitsu, I. J., Kruse, J. G. S., Nagai, N., Kayaba, M., Ogata, H., **Mangalam, M.**, & Kiyono, K. (2024). Age- and height-dependent bias of underweight and overweight assessment standards for children and adolescents. **Frontiers in Public Health** 12, 1379897.

Mangalam, M., Seleznev, I., Kolosova, E., Popov, A., Kelty-Stephen, D. G., & Kiyono, K. (2024). Postural control in gymnasts: Anisotropic fractal scaling reveals proprioceptive reintegration in vestibular perturbation. **Frontiers in Network Physiology** 4, 1393171.

Seckler, H., Metzler, R., Kelty-Stephen, D. G. & **Mangalam, M.** (2024). Multifractal spectral features enhance classification of anomalous diffusion. **Physical Review E** 109(4), 044133.

Mangalam, M., Seleznev, I., Popov, A., Kelty-Stephen, D. G., Likens, A. D., Kiyono, K., & Stergiou, N. (2024). Older adults and individuals with Parkinson's disease control posture along suborthogonal directions that deviate from the traditional anteroposterior and mediolateral directions. **Nature Scientific Reports** 14, 4117.

Kelty-Stephen, D. G. & **Mangalam, M.** (2024). Additivity suppresses multifractal nonlinearity due to multiplicative cascade dynamics. **Physica A: Statistical Mechanics and its Applications** 637, 129573.

Wiles, T. M., **Mangalam, M.**, Sommerfeld, J. H., Kim, S. K., Brink, K. J., Charles, A. E., Grunkemeyer, A. Manifrenti, M. E. K., Stergiou, N., Mastorakis, S., and Likens, A. D. (2023). NONAN GaitPrint: An IMU gait database of healthy young adults. **Nature Scientific Data** 10, 837.

Mangalam, M., Kelty-Stephen, D. G., Hayano, J., Watanabe, E., & Kiyono, K. (2023). Quantifying non-Gaussian intermittent fluctuations in physiology: Multiscale probability density function analysis using the Savitzky-Golay detrending. **Physical Review Research** 5(4), 043157.

Mangalam, M., Sadri, A., Hayano, J., Watanabe, E., Kiyono, K., & Kelty-Stephen, D. G. (2023). Multifractal foundations of biomarker discovery for heart disease and stroke. **Nature Scientific Reports** 13, 18316.

Wilson, T., **Mangalam, M.**, Stergiou, N., & Likens, A. (2023). Multifractality in stride-to-stride variations reveals that walking involves more movement tuning and adjusting than running. **Frontiers in Network Physiology** 3, 1294545.

Mangalam, M., Kelty-Stephen, D. G., Sommerfeld, J., Stergiou, N., & Likens, A. D. (2023). Temporal organization of stride-to-stride variations contradicts predictive models for sensorimotor control of footfalls during walking. **PLoS One** 18(8): e0290324.

Mangalam, M., Metzler, R., & Kelty-Stephen, D. G. (2023). Ergodic characterization of nonergodic anomalous diffusion processes. **Physical Review Research** 5(2), 023144.

Kelty-Stephen, D. G. & **Mangalam, M.** (2023). Multifractal descriptors ergodically characterize non-ergodic multiplicative cascade processes. **Physica A: Statistical Mechanics and its Applications** 617, 128651.

Gupta, A., Kelty-Stephen, D. G., **Mangalam, M.**, McKindles, R. J., & Stirling, L. A. (2023). Walking speed and dual-task input modality impact performance on a self-paced treadmill. **Applied Ergonomics** 109, 103986.

Aiempichitkijarn, N., Eshchar, Y., **Mangalam, M.**, Izar, P., Resende, B., Visalberghi, E., & Fragaszy, D. M. (2023). The development of expertise at cracking palm nuts by wild bearded capuchin monkeys, *Sapajus libidinosus*. **Animal Behaviour** 197, 1–14.

Kelty-Stephen, D. G., Lee, J., Cole, K. R., Shields, R. K., **Mangalam, M.** (2023). Multifractal nonlinearity moderates feedforward and feedback responses to suprapostural perturbations. **Perceptual and Motor Skills** 130(2), 622–657.

Mangalam, M., Skiadopoulos, A., Siu, K.-C., Mukherjee, M., Likens, A., & Stergiou, N. (2023). Leveraging a virtual alley with continuously varying width modulates step width variability during self-paced treadmill walking. **Neuroscience Letters** 793, 136966.

Kelty-Stephen, D. G. & **Mangalam, M.** (2022). Fractal and multifractal descriptors restore ergodicity broken by non-Gaussianity in time series. **Chaos, Solitons & Fractals** 163, 112568.

Kelty-Stephen, D. G., Lane, E., Bloomfield, L., & **Mangalam, M.** (2022). Multifractal test for nonlinearity of interactions across scales in time series. **Behavior Research Methods** 55, 2249–2282.

Lockwood, L., Bicer, Y., Asghari-Esfeden, S., Zhu, T., Furmanek, M. P., **Mangalam, M.**, Strenge, G., Imbiriba, T., Yarossi, M.,

- Padir, T., Erdogmus, D., & Tunik, E. (2022). Leveraging submovements in prediction and trajectory planning for human-robot handover. **PETRA '22: Proceedings of the 15th International Conference on Pervasive Technologies Related to Assistive Environments** 247–253.
- Mangalam, M.** & Kelty-Stephen, D. G. (2022). Ergodic descriptors of non-ergodic stochastic processes. **Journal of The Royal Society Interface** 19(189), 20220095.
- Mangalam, M.** Ross, C. F., Izar, P., Visalberghi, E., & Frigaszy, D. M. (2022). Capuchin monkeys use their semi-prehensile tail as a cantilever. **Current Science** 122(2), 195–200.
- Furmanek, M. P.¹, **Mangalam, M.**¹, Yarossi, M.¹, Lockwood, K., & Tunik, E. (2022). A kinematic and EMG dataset of online adjustment of reach-to-grasp movements to visual perturbations. **Nature Scientific Data** 9, 23.
- Fragaszy, D. M., Lukemire, J., Reynoso-Cruz, E. R., Villareal, S., Sheheane, S., Quinones, M., & **Mangalam, M.** (2021). How tufted capuchin monkeys (*Sapajus* spp.) and humans (*Homo sapiens*) handle a jointed tool. **Journal of Comparative Psychology** 135(3), 382–393.
- Bloomfield, L., Lane, E., **Mangalam, M.**, & Kelty-Stephen, D. G. (2021). Perceiving and remembering speech depend on multifractal nonlinearity in movements producing and exploring speech. **Journal of The Royal Society Interface** 18(181), 20210272.
- Furmanek, M. P., **Mangalam, M.**, Lookwood, K., Smith, A.*, Yarossi, M., & Tunik, E. (2021). Effects of sensory feedback and collider size on reach-to-grasp coordination in haptic-free virtual reality. **Frontiers in Virtual Reality** 2, 648529.
- Mangalam, M.** & Kelty-Stephen, D. G. (2021). Hypothetical control of postural sway. **Journal of The Royal Society Interface** 18(176), 20200951.
- Mangalam, M.**, Yarossi, M., Furmanek, M. P., & Tunik, E. (2021). Control of aperture closure during reach-to-grasp movements in immersive haptic-free virtual reality. **Experimental Brain Research** 239(5), 1651–1665.
- Kelty-Stephen, D. G., Lee, I-C., Carver, N. S., Newell, K. M., & **Mangalam, M.** (2021). Multifractal roots of suprapostural dexterity. **Human Movement Science** 76, 102771.
- Mangalam, M.**, Desai, N., & Kelty-Stephen, D. G. (2021). Proprioceptive afferents differentially contribute to effortful perception of object heaviness and length. **Experimental Brain Research** 239(4), 1085–1098.
- Jacobson, N., Berleman-Paul, Q., **Mangalam, M.**, Kelty-Stephen, D. G., & Ralston, C. (2021). Multifractality in postural sway supports quiet eye training in aiming tasks: A study of golf putting. **Human Movement Science** 75, 102752.
- Kelty-Stephen, D. G., Furmanek, M. P., & **Mangalam, M.** (2021). Multifractality distinguishes reactive from proactive cascades in postural control. **Chaos, Solitons & Fractals** 142, 110471.
- Mangalam, M.**, Lee, I-C., Newell, K. M., & Kelty-Stephen, D. G. (2021). Visual effort moderates postural cascade dynamics. **Neuroscience Letters** 742, 135511.
- Furmanek, M. P., **Mangalam, M.**, Kelty-Stephen, D. G., & Juras, G. (2021). Postural constraints recruit shorter-timescale processes into the non-Gaussian cascade processes. **Neuroscience Letters** 741, 135508.
- Mangalam, M.**, Carver, N. S., & Kelty-Stephen, D. G. (2020). Multifractal signatures of perceptual processing on anatomical sleeves of the human body. **Journal of The Royal Society Interface** 17(168), 20200328.
- Mangalam, M.**, Carver, N. S., & Kelty-Stephen, D. G. (2020). Global broadcasting of local fractal fluctuations in a bodywide distributed system supports perception via effortful touch. **Chaos, Solitons & Fractals** 135, 109740.
- Mangalam, M.** & Kelty-Stephen, D. G. (2020). Multiplicative-cascade dynamics supports whole-body coordination for perception via effortful touch. **Human Movement Science** 70, 102595.
- Mangalam, M.**, Chen, R.*, McHugh, T. R.*, Singh, T., & Kelty-Stephen, D. G. (2020). Bodywide fluctuations support manual exploration: Fractal fluctuations in posture predict perception of heaviness and length via effortful touch by the hand. **Human Movement Science** 69, 102543.
- Mangalam, M.**, Roles, L. K. R.*, & Frigaszy, D. M. (2020). Distinct perceptuomotor features of percussive tooling in humans (*Homo sapiens*) and wild bearded capuchin monkeys (*Sapajus libidinosus*). **Journal of Comparative Psychology** 134(1), 84–97.
- Cutts, S. A.*, Frigaszy, D. M., & **Mangalam, M.** (2019). Consistent inter-individual differences in susceptibility to bodily illusions. **Consciousness and Cognition** 76, 102826.
- Mangalam, M.**, Cutts, S. A.*, & Frigaszy, D. M. (2019). Sense of ownership and not the sense of agency is spatially bounded within the space reachable with the unaugmented hand. **Experimental Brain Research** 237(11), 2911–2924.

Mangalam, M., Conners, J. D.*, Kelty-Stephen, D. G., & Singh, T. (2019). Fractal fluctuations in muscular activity contribute to judgments of length but not heaviness via dynamic touch. *Experimental Brain Research* 237(5), 1213–1226.

Mangalam, M., Pacheco, M. M., Frigaszy, D. M., & Newell, K. M. (2019). Perceptual learning of tooling affordances of a jointed object via dynamic touch. *Ecological Psychology* 31(1), 14–29.

Mangalam, M., Conners, J. D.*, & Singh, T. (2019). Muscular effort differentially mediates perception of heaviness and length via dynamic touch. *Experimental Brain Research* 237(1), 237–246.

Mangalam, M., Rein, R., & Frigaszy, D. M. (2018). Bearded capuchin monkeys use joint synergies to stabilize the hammer trajectory while cracking nuts in bipedal stance. *Proceedings of the Royal Society B: Biological Sciences* 285(1889), 20181797.

***Cover Page Article**

Mangalam, M., Conners, J. D.*, Frigaszy, 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., 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., & Frigaszy, D. M. (2018). Unique perceptuomotor control of stone hammers in wild monkeys. *Biology Letters* 14(1), 20170587.

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

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

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(5), 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.

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

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.

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.

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 lydekkerianus lydekkerianus*) in Karnataka, India through estimation of population density. **International Journal of Primatology** 32(5), 1153–1160.

PEER-REVIEWED REVIEW / PERSPECTIVE ARTICLES*

*Undergraduate mentees.

Mangalam, M. (2025). The myth of optimality in human movement science. **Neuroscience & Biobehavioral Reviews** (Under review).

Mangalam, M. (2025). The myth of the Bayesian brain. **European Journal of Applied Physiology** (In press).

Mangalam, M., & Kelty-Stephen, D. G. (2025). Coordination across scales: A multifractal perspective on scientific modeling of movement. **Brazilian Journal of Motor Behavior** 19, 1.

Kelty-Stephen, D. G. & **Mangalam, M.** (2025). Ball don't lie: Commentary on Chemero (2024) and Wallot et al. (2024). **Topics in Cognitive Science** (In press).

Mangalam, M., Oruganti, S., Buckingham, G., & Borst, C. W. (2024). Enhancing hand-object interactions in virtual reality for precision manual tasks. **Virtual Reality** 28, 166.

Fragaszy, D. M., Kelty-Stephen, D. G., & **Mangalam, M.** (2024). The organizing role of bipedalism in human tooling. **Philosophical Transactions of the Royal Society B** 379, 20230152.

Mangalam, M., Yarossi, M., Furmanek, M. P., Krakauer, J. W., & Tunik, E. (2023). Investigating and acquiring motor expertise using virtual reality. **Journal of Neurophysiology** 129, 1482–1491.

Kelty-Stephen, D. G. & **Mangalam, M.** (2022). Turing's cascade instability supports the coordination of mind, brain, and behavior. **Neuroscience & Biobehavioral Reviews** 141, 104810.

Mangalam, M., Frigaszy, D. M., Wagman, J. B., Day, B. G., Kelty-Stephen, D. G., Bongers, R. M., Stout, D. W., & Osiurak, F. (2022). On the psychological origins of tool use. **Neuroscience & Biobehavioral Reviews** 133, 104521.

Yarossi, M., **Mangalam, M.**, Naufel, S., & Tunik, E. (2021). Virtual Reality as a context for adaptation. **Frontiers in Virtual Reality** 2, 733076.

Mangalam, M. & Kelty-Stephen, D. G. (2021). Point estimates, Simpson's paradox, and nonergodicity in biological sciences. **Neuroscience & Biobehavioral Reviews** 125, 98–107.

Mangalam, M., González, C., & Singh, T. (2021). Sensory redundancy and perceptual invariance in force production and object manipulation. **Current Opinion in Physiology** 19, 148–155.

Fragaszy, D. M. & **Mangalam, M.** (2020). Folk physics in the twenty-first century: Understanding tooling as embodied. **Animal Behavior and Cognition** 7(3), 457–473.

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

Mangalam, M. (2018). Emergent coordination with a brain-machine interface: Implications for the neural basis of motor learning. **Journal of Neurophysiology** 120(3), 889–892.

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

Mangalam, M. & Frigaszy, D. M. (2016). Transforming the body-only system into the body-plus-tool system. **Animal Behaviour** 117, 115–122.

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.

BOOK CHAPTERS

- Kelty-Stephen, D. G., Kiyono, K., & **Mangalam, M.** (2025). Multiscale probability density function analysis. In Stergiou, N. & Likens, A. (Ed.), **Nonlinear Analysis for Human Movement Variability**. New York, NY: CRC Press.
- Kelty-Stephen, D. G. & **Mangalam, M.** (2025). Multifractal analysis: A window on the nonlinear release/constraint of degrees of freedom. In Stergiou, N. & Likens, A. (Ed.), **Nonlinear Analysis for Human Movement Variability**. New York, NY: CRC Press.
- Kelty-Stephen, D. G. & **Mangalam, M.** (2025). Knitting together the mind, brain, and behavior with Turing's cascade instability. In Kelty-Stephen, D. G. & Mangalam, M. (Ed.), **Beyond the Computer Metaphor of Mind and Brain**. Cambridge University Press, Cambridge, UK.
- Kelty-Stephen, D. G. & **Mangalam, M.** (2025). Computer metaphors alone cannot do the job. In Kelty-Stephen, D. G. & Mangalam, M. (Ed.), **Beyond the Computer Metaphor of Mind and Brain**. Cambridge University Press, Cambridge, UK.
- Kelty-Stephen, D. G., Farrokh, D., & **Mangalam, M.** (2025). Multiscale dynamics might be essential to ecological psychology: Promises, challenges, and real possibilities. In Ortin, M. S., Nonaka, T., & Wagman, J. B. (Ed.), **Handbook of Ecological psychology**. New York, NY: Routledge.
- Mangalam, M.**, Barrett, A., & Frigaszy, D. M. (2024). From Turing to Gibson: Implications of affordances for the sciences of organisms. In Mangalam, M., Hajnal, A., & Kelty-Stephen, D. G. (Ed.) **The Modern Legacy of Gibson's Affordances for the Sciences of Organisms** (pp. 249–267). Routledge, New York, NY.
- Mangalam, M.**, Hajnal, A., & Kelty-Stephen, D. G. (2024). 50 years on: What does affordance afford us? In Mangalam, M., Hajnal, A., & Kelty-Stephen, D. G. (Ed.) **The Modern Legacy of Gibson's Affordances for the Sciences of Organisms** (pp. 1–8). Routledge, New York, NY.
- Mangalam, M.** (2022). Simpson's paradox in psychology. In Dunn, D. S. (Ed.), **Oxford Bibliographies**. New York, NY: Oxford University Press.
- Mangalam, M.** (2022). Nonergodicity in psychology and neuroscience. In Dunn, D. S. (Ed.), **Oxford Bibliographies**. New York, NY: Oxford University Press.
- Mangalam, M.** (2016). What makes a tool. In Shackelford, T. K. & Weekes-Shackelford, V. A. (Eds.), **Encyclopedia of Evolutionary Psychological Science** (pp. 1–5). New York, NY: Springer.
- Mangalam, M.** & Frigaszy, D. M. (2015). Quantifying affordances. In Weast-Knapp, J., Malone, M., & Abney, D. (Eds.), **Studies in Perception and Action XVIII** (pp. 199–202). New York, NY: Psychology Press.

EDITORIALS & OTHERS*

*Undergraduate mentees.

-
- Mangalam, M.** & Singh, M. (2025). The price of progress: Why science in India deserves more. **DIALOGUE: Science, Scientists and Society** (In press).
- Karve, S. M. & **Mangalam, M.** (2016). Junior researchers: Hasty publication compromises rigour. **Nature** 531(7594), 305.
- Nettimi, R. P.*, **Mangalam, M.**, & Singh, M. (2015). Why not be an early bird researcher? **Current Science** 108(6), 1027–1028.

PUBLISHED ABSTRACTS*

*Undergraduate mentees.

-
- Mangalam, M.**, Roles, L. K. R.*, & Frigaszy, D. M. (2018). Identifying distinguishing features of perceptuomotor control of stone tools in humans and bearded capuchins monkeys. **American Journal of Primatology** 80(S1), 39–40.
- 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.** & Frigaszy, 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., & Frigaszy, D. M. (2017). How wild bearded capuchin monkeys crack nuts. **Integrative & Comparative Biology** 57(suppl_1), e337.

Mangalam, M., Roles, L. K. R. *, & Frigaszy, 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.

INVITED WORKSHOPS

- 2023 **Center for Mind, Brain, and Culture, Emory University** Atlanta, GA | June 15–17
Minds in Movement: Prospects for the Study of Embodied Cognition, Learning, and Culture

INVITED PRESENTATIONS

- 2025 **Department of Biomechanics, University of Nebraska at Omaha** Omaha, NE | March 07
Bridging cognitive and biomechanical constraints: Network approaches to whole-body coordination in postural control and rehabilitation
- 2025 **Human Interactivity and Language Lab, University of Warsaw** Warsaw, Poland (via Zoom) | February 06
How bipedalism shapes humans' actions with hand tools.
- 2024 **Francis Marion University** Florence, SC (via Zoom) | October 24
Rethinking human sensorimotor performance: Beyond engineering assumptions and towards a fluid understanding.
- 2024 **Indian Institute of Science Education and Research Pune** Pune, India | June 29
Rethinking human sensorimotor performance: Beyond engineering assumptions and towards a fluid understanding.
- 2024 **Department of Physics & Astronomy, University of Bristol** Bristol, UK (via Zoom) | June 24
Rethinking human sensorimotor performance: Beyond engineering assumptions and towards a fluid understanding.
- 2024 **Department of Physical Therapy and Rehabilitation Science, University of Iowa** Iowa City, IA | June 06
Rethinking human sensorimotor performance: Beyond engineering assumptions and towards a fluid understanding.
- 2024 **Department of Physics & Astronomy, University of Potsdam** Potsdam, Germany (via Zoom) | April 19
Rethinking human sensorimotor performance: Beyond engineering assumptions and towards a fluid understanding.
- 2024 **Department of Psychology, University of California** Riverside, CA (via Zoom) | April 13
Rethinking human sensorimotor performance: Beyond engineering assumptions and towards a fluid understanding.
- 2024 **Department of Mechanical & Materials Engineering, University of Nebraska Lincoln** Lincoln, NE | February 13
Rethinking human sensorimotor performance: Beyond engineering assumptions and towards a fluid understanding.

- 2024 **Department of Intervention Cardiology, King George's Medical University** Lucknow, India | January 5
Advancing cardiac care: Unleashing the power of nonlinear algorithms for early prognosis in chronic cardiovascular diseases.
- 2023 **Francis Marion University** Florence, SC (via Zoom) | September 28
Multifractal analysis: A window on the nonlinear release/constraint of degrees of freedom.
- 2023 **Department of Biomechanics, University of Nebraska at Omaha** Omaha, NE | September 1
Multifractal analysis: A window on the nonlinear release/constraint of degrees of freedom.
- 2023 **Department of Biomechanics, University of Nebraska at Omaha** Omaha, NE | February 17
Is non-ergodicity a cause of the reproducibility crisis?
- 2022 **Brain, Learning, Animation, and Movement Lab, Johns Hopkins Neurology** Baltimore, MD (via Zoom) | April 29
Using Turing's cascade instability to knit together the mind, brain, and behavior.
- 2022 **CESPA, Department of Psychological Sciences, University of Connecticut** Storrs, CT | April 01
Using Turing's cascade instability to knit together the mind, brain, and behavior.
- 2021 **Department of Psychology, University of Tennessee** Knoxville, GA | December 8
Using Turing's cascade instability to knit together the mind, brain, and behavior.
- 2021 **Department of Cognitive Science, Indian Institute of Technology** Kanpur, India | November 9
Multifractal signatures of perceptual processing on anatomical sleeves of the human body.
- 2016 **American Association of Physical Anthropologists** Atlanta, GA | April 13–16
Embodied foundations of stone tool use shared by humans and bearded capuchin monkeys.
- Symposium: **Hands, Brains, and Tools: Integrating concepts in human evolution** organized by Dr. Dietrich W. Stout*

ORAL PRESENTATIONS

- 2024 **9th Annual Conference in Human Movement Variability** Omaha, NE | May 29–30
Older adults and individuals with Parkinson's disease control posture along suborthogonal directions that deviate from the traditional anteroposterior and mediolateral directions.
- 2023 **XXI International Conference on Perception–Action** Guadalajara, México | June 27–30
Temporal organization of stride-to-stride variations during overground walking contradicts predictive models for sensorimotor control
- 2023 **XXI International Conference on Perception–Action** Guadalajara, México | June 27–30
Is non-ergodicity a cause of the reproducibility crises?
- 2023 **8th Annual Conference in Human Movement Variability** Omaha, NE | June 5–6
Temporal organization of stride-to-stride variations contradicts predictive models for sensorimotor control of walking.
- 2023 **Ergodicity Economics** | January 30–31
Is non-ergodicity a cause of the reproducibility crises?
- 2022 **North American International Society for Ecological Psychology** Hattiesburg, MS | June 23–25
Exploring multifractal roots of suprapostural dexterity using ergodic descriptors of nonergodic postural fluctuations.
- 2022 **North American International Society for Ecological Psychology** Hattiesburg, MS | June 23–25
Multifractal nonlinearity in movements producing and exploring speech supports perceiving and remembering speech.
- 2018 **North American 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 space, of a fish's fin, a flamingo's neck, a monkey's tail, a snake's spine, and a bat's wing.

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

POSTER PRESENTATIONS

- 2024 **American Society for Biomechanics** Madison, WI | August 5–8
Older adults and individuals with Parkinson's disease control posture along suborthogonal directions that deviate from the traditional anteroposterior and mediolateral directions.
- 2023 **International Society for Posture & Gait Research** Brisbane, Australia | July 9–15
NONAN GaitPrint: A public repository of overground walking data.
- 2023 **NSF DARE: Transformative Opportunities for Modeling in Neurorehabilitation** Los Angeles, CA | March 3–4
Leveraging nonlinear descriptors of variability for individualized, reproducible assessment of movement and cognitive performance.
- 2022 **Psychonomic Society 63rd Annual Meeting** Boston, MA | November 17–20
Nonlinear temporal structure provides a common substrate for the production, perception, and memory of language.
- 2022 **Society for the Neural Control of Movement** Dublin, Ireland | July 25–29
An immutable control policy governs fingers closure during reach-to-grasp coordination.
- 2022 **Society for the Neural Control of Movement** Dublin, Ireland | July 25–29
Frontoparietal involvement in online updating of reach-to-grasp to mechanical perturbations of hand transport: A TMS study.
- 2021 **Society for Neuroscience** Global Connectome | Jan 11–13
Involvement of dorsal and ventral premotor cortices in online updating to reach and grasp perturbations.
- 2019 **Boston Area Neuroscience Group** Boston, MA | November 7
Grasp responses to mechanical perturbations of reach.
- 2019 **Society for Neuroscience** Chicago, IL | October 19–23
Grasp Response to transport perturbation during reach-to-grasp in virtual environment.
- 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.

MEDIA COVERAGE OF RESEARCH*

*Undergraduate mentees.

Mangalam, M., Rein, R., & Frigaszy, D. M. (2018). Bearded capuchin monkeys use joint synergies to stabilize the hammer trajectory while cracking nuts in a bipedal stance. *Proceedings of the Royal Society B: Biological Sciences* 285(1889), 20181797.

Featured in:

The Franklin Chronicles Up on two feet

The Royal Society A hard nut to crack...

Mangalam, M., Pacheco, M. M., Izar, P., Visalberghi, E., & Fragaszy, D. M. (2018). Unique perceptuomotor control of stone hammers in wild monkeys. *Biology Letters* 14(1), 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.

Featured in:

Psychonomic Society The eigenvalues of lightsabers and submerged golden hammers

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

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). 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

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
- 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

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 lydekkerianus lydekkerianus*) 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

PROFESSIONAL MEMBERSHIPS

American Society for Biomechanics (ASB)
 International Society for Ecological Psychology (ISEP)
 Society for Neuroscience (SfN)
 Society for the Neural Control of Movement (NCM)

PEER-REVIEWED JOURNAL EDITORIALSHIP

Cognitive Processing - International Quarterly of Cognitive Science (*Handling Editor*)

AD-HOC GRANT REVIEWERSHIPS

- 2024 National Institute of Health – AIMR Study Section | July 18–19
- 2024 National Science Foundation – Perception, Action & Cognition (PAC)
- 2024 Leakey Foundation
- 2023 Graduate Women in Science (GWIS) National Fellowship Program

AD-HOC JOURNAL REVIEWERSHIPS

Accounts of Materials Research
Acta Psychologica
Aging Medicine and Healthcare
Alzheimer's & Dementia
Animal Behaviour
Animal Cognition
Annals of Biomedical Engineering

Animal Behavior and Cognition
 Attention, Perception, & Psychophysics
 Autism Research
 Behavioural Processes
 Behavioural Brain Research
 Biology Letters
 Biomedical Signal Processing and Control
 BMJ Open
 Brain Injury
 Chaos, Solitons & Fractals
 Cognitive Systems Research
 Consciousness and Cognition
 Current Science
 Digital Health
 Ecological Psychology
 Entropy
 Heliyon
 Human Movement Science
 International Journal of Human-Computer Interaction (IJHCI)
 IEEE Access
 IEEE Open Journal of Engineering in Medicine and Biology
 IEEE Transactions on Neural Systems & Rehabilitation Engineering
 International Journal of Primatology
 Journal of Biomechanics
 Journal of Biosciences
 Journal of Comparative Psychology
 Journal of Gerontology: Biological Sciences
 Journal of Motor Behavior
 Journal of The Royal Society Interface
 Journal of Visualized Experiments (JoVE)
 Journal for Nature Conservation
 Medical Engineering and Physics
 Medicine
Medicine & Science in Sports & Exercise
 Motor Control
 Multimedia Tools and Applications
 Nature
 Nature Scientific Reports
 Nature Scientific Data
 NeuroImage
 Neurological Sciences
 NeuroMarkers
 Neuroscience
 Neuroscience Letters
 Peer J
 Perceptual and Motor Skills
 Philosophical Transactions of the Royal Society B: Biological Sciences
 Physical Chemistry Chemical Physics
 Physiology & Behavior
 Physica A: Statistical Mechanics and its Applications
 Physiotherapy Research International
 PLoS One
 Psychological Review
 Psychological Studies
 Psychophysiology
 Quarterly Journal of Experimental Psychology
 Research Quarterly for Exercise and Sport
 Sensors
 Sports Biomechanics
 Sports Medicine

AWARDS, FELLOWSHIPS, & GRANTS

- 2023 **NSF DARE Fellowship: Transformative Opportunities for Modeling in Neurorehabilitation**
University of Southern California & University of Washington
- 2019 **Herbert Zimmer Award for Outstanding Research | USD 500**
Department of Psychology, University of Georgia
- 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
- 2015 **Honorary Domestic Travel Assistance | INR 11,000**
Biopsychology Laboratory, University of Mysore, India
- 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 Science & Technology, India
- 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

LAB METHODS IN BIOMECHANICS II | Instructor of Record
January 2025 – May 2025 | University of Nebraska at Omaha

BIOMECHANICS | Instructor of Record
August 2024 – December 2024 | University of Nebraska at Omaha

ETHICS OF SCIENTIFIC RESEARCH | Instructor of Record
January 2024 – May 2024 | University of Nebraska at Omaha

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

PH.D. THESIS COMMITTEE

2024–Present **Jania Williams**
Biomechanics, University of Nebraska at Omaha

GRADUATE MENTORSHIP

2024–Present **Brian Schlattmann**
Biomechanics, University of Nebraska at Omaha

2024–Present **Theodoros Deligiannis**
Biomechanics, University of Nebraska at Omaha

2024–Present **Mahsa Barfi**
Biomechanics, University of Nebraska at Omaha

2023–2024 **Shahid Attar**
Mathematical and Statistical Sciences, University of Nebraska at Omaha

2022–2023 **Kolby Brink, Anaelle E. Charles, Alli Grunkemeyer, Seung Kyeom Kim, Maria E. K. Manifrenti, & Tyler Wiles**
Biomechanics, University of Nebraska at Omaha

UNDERGRADUATE MENTORSHIP

- 2019-20 **Andrea Smith**
Bioengineering Major, Northeastern University
- 2019 **Holden Lalor**
Bioengineering Major, Northeastern University
- 2019 **Yael Lissack**
Bioengineering Major, Northeastern University
- 2018-19 **Sarah Cutts**
Psychology & Neuroscience Major, University of Georgia
- 2018 **Pakeeza A. Hafeez**
Psychology & Biology Major, University of Georgia
- 2018 **Peyton Niebanck**
Fisheries and Wildlife Major, University of Georgia
- 2018 **Ryan Chen**
Kinesiology Major, University of Georgia
Ryan received **Michael E. Penland Family Award** for his research project
- 2018 **Terrence R. McHugh**
Kinesiology Major, University of Georgia
- 2017-18 **James D. Conners**
Psychology & Communications Major, University of Georgia
James received **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

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