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DR VIVEK NITYANANDA

CURRENT POSITION: BBSRC David Phillips Fellow, Institute of Neuroscience, Newcastle University (2019-present)

PREVIOUS APPOINTMENTS:

- Postdoctoral Research Associate, Institute of Neuroscience, Newcastle University (2013-2019)
- College for Life Sciences Fellow, Wissenschaftskolleg zu Berlin, Institute for Advanced Study (2016-2017)
- Marie Curie Research Fellow, Queen Mary University of London (2011-2013)
- Human Frontiers Science Program Fellow, Queen Mary University of London (2010-2011)
- Postdoctoral Research Associate, University of Minnesota (2009-2010)

EDUCATION: PhD, Indian Institute of Science, Bangalore, 2008

PUBLICATIONS

- *14 corresponding author publications, 4 independent author publications*

- **Nityananda V**. Insect Neurobiology: Divergent neural computations in predatory insects. (2020) *Current Biology*, 30, R159-R161.
- **Nityananda V**, O'Keeffe J, Umeton D, Simmons A, Read J. Second-order cues to figure motion enable object detection during prey capture by praying mantises. (2019) *Proceedings of the National Academy of Sciences, USA,* 116, 27018-27027.
- **Nityananda V**, Joubier C, Tan J, Tarawneh G, Read JCA. (2019) Motion-in-depth perception and prey capture in the praying mantis *Sphodromantis lineola*. *Journal of Experimental Biology*, 222: jeb198614.
- Tarawneh G, Jones L, **Nityananda V**, Rosner R, Rind C, Read JCA. (2018) Apparent Motion Perception in the Praying Mantis: Psychophysics and Modelling. *Vision,* 2, 32.

- Tarawneh G, **Nityananda V**, Rosner R, Errington S, Herbert W, Arranz-Paraiso S, Busby N, Tampin J, Read JCA, Serrano-Pedraza I. (2018) Contrast thresholds reveal different visual masking functions in humans and praying mantises. *Biology Open*, 7: bio029439
- **Nityananda V**, Tarawneh G, Henriksen S, Umeton D, Simmons A, Read JCA. (2018) A novel form of stereo vision in the praying mantis. *Current Biology*, 28, 588-593 (**cover image**).
- **Nityananda V**, Read JCA. (2017) Stereopsis in animals: evolution, function and mechanisms. *Journal of Experimental Biology*, 220, 2502-2512.
- Tarawneh G, **Nityananda V**, Rosner R, Errington S, Herbert W, Cumming BG, Read JCA, Serrano-Pedraza I. (2017) Invisible noise obscures visible signal in insect motion detection. *Scientific Reports*, 7, 3496.
- **Nityananda V,** Tarawneh G, Errington S, Read JCA, Serrano-Pedraza I. (2017) The optomotor response of the praying mantis is driven predominantly by the central visual field. *Journal of Comparative Physiology A*, 203, 77-87.
- **Nityananda V.** (2016) Attention-like processes in insects. *Proceedings of the Royal Society B*, 283, 20161986, DOI: 10.1098/rspb.2016.1986
- **Nityananda V,** Bissianna G, Tarawneh G, Read JCA. (2016) Small or far away? Size and distance perception in the praying mantis. *Philosophical Transactions of the Royal Society B,* 371, 20150262.
- **Nityananda V,** Tarawneh G, Nicolas JCA, Rosner R, Crichton S, Read J. (2016) Insect stereopsis demonstrated using a 3D insect cinema. *Scientific Reports,* 6, 1-9.
- **Nityananda V** & Chittka L. (2015) Modality-specific attention in foraging bumblebees. *Royal Society Open Science*, 2: 150324 (**cover image**). DOI: 10.1098/rsos.150324
- **Nityananda V**, Tarawneh G, Jones L, Busby N, Davies R, Read JCA. (2015) The contrast-sensitivity function of the praying mantis *Sphodromantis lineola*. *Journal of Comparative Physiology A,* 201, 741-750.
- Lamba S* & **Nityananda V***. (2014) Self-deceived individuals are better at deceiving others. *PLoS One*, 9, e104562. (***both authors contributed equally**).
- **Nityananda V**, Skorupski P & Chittka L. (2014) Can bees see at a glance? *Journal of Experimental Biology,* 217, 1933-1939.

- **Nityananda V.** (2013) Making sense of the world. (Invited review of Sensory Ecology, Behaviour and Evolution by Martin Stevens) *Journal of Evolutionary Psychology*, 11, 89-92.
- **Nityananda V** & Pattrick J. (2013) Bumblebee visual search for multiple learned target types. *Journal of Experimental Biology,* 216, 4154-4160.
- **Nityananda V** & Bee M. (2012) Spatial release from masking in a free-field source identification task by gray treefrogs. *Hearing Research*, 285, 86-97 (**cover image**).
- **Nityananda V** & Bee M. (2011) Finding your mate at a cocktail party: frequency separation promotes auditory stream segregation of concurrent voices in multi-species frog choruses. *PLoS One*, 6, e21191.
- **Nityananda V** & Balakrishnan R. (2009) Modelling the role of cooperation and competition in the evolution of katydid acoustic synchrony. *Behavioural Ecology*, 20, 484-489.
- **Nityananda V** & Balakrishnan R. (2008) Leaders and followers in katydid choruses in the field: consistency, spacing and call intensity. *Animal Behaviour*, 75, 723-735.
- **Nityananda V**, Stradner J, Balakrishnan R & Römer H. (2007) Selective attention in a synchronising bushcricket: physiology, behaviour and ecology. *Journal of Comparative Physiology A*, 193, 983-991.
- **Nityananda V** & Balakrishnan R. (2007) Synchrony during acoustic interactions in the bushcricket Mecopoda 'Chirper' (*Tettigoniidae:Orthoptera*) is generated by a combination of chirp-by-chirp resetting and change in intrinsic chirp rate. *Journal of Comparative Physiology A*, 193, 51-65.
- **Nityananda V** & Balakrishnan R. (2006) A diversity of songs among morphologically indistinguishable katydids of the Genus Mecopoda (*Orthoptera: Tettigoniidae*) from Southern India. *Bioacoustics*, 15, 223–250.

FELLOWSHIPS AND GRANTS

- **2019:** BBSRC David Phillips Fellowship: '*Attention-like processes in insects: applications to pollinator biology and health*': **£1,005,836 ($1,315,772)**

- **2016:** Wissenschaftskolleg zu Berlin, Institute of Advanced Study, College for Life Sciences fellowship: *'A natural history of attention'*: **£12,520 ($16,266)**
- **2016:** Wellcome Trust Small Arts Award (for a play about insect senses with Cap-A-Pie Theatre, Newcastle): **£15,177 ($19,718)**
- **2016:** EngageFMS-Creative Arts Practice Award (for a play about insect senses with Cap-A-Pie Theatre, Newcastle): **£3,350 ($4,352)**
- **2015:** Great North Museum fellowship for public engagement: **£1,500 ($1,949)**
- **2014:** Centre for Behaviour and Evolution, Newcastle University small funds grant – with Dr. Ghaith Tarawneh and Dr. Ronny Rosner: **£1,893 ($2,459)**
- **2011**: Centre for Ecology and Evolution, London grant: '*The evolution of self-deception*' –with Dr. Shakti Lamba, University of Exeter: **£2,000 ($2,599)**
- **2011**: Marie Curie International Incoming Fellowship: '*Visual search and attention in bumblebees'*: **£142,210 ($184,764)**
- **2010**: Human Frontiers in Science Program Long Term Fellowship: "*Visual search and attention in bumblebees*": **£96,380** (**$124,845)**
- **2008:** International Society for Behavioral Ecology Travel Fellowship
- **2006:** International Congress of Neuroethology Travel Fellowship

EVIDENCE OF VISIBILITY AND ESTEEM

- **Academic Editor:** PLoS One, 2018 –onwards.
- **24 Presentations at international conferences:** 2004-2018
- **Invited grant reviewer:** National Science Centre Poland, 2020.
- **Invited fellowship reviewer:** Newton International Fellowships, 2020.
- **Invited speaker:** University of Sussex, Falmer, UK, 2020.
- **Invited speaker**: Interdisciplinary College, Günne, Germany, 2020.
- **Invited speaker**: University of St Andrews, St Andrews, UK, 2019.
- **Invited participant**: Science FOO conference (organized by Google and Nature), Mountain View, California, USA, 2019.
- **Invited session chair:** Antipredator Coloration Symposium, university of Exeter, Falmouth, UK, 2019.
- **Invited participant:** UKRI Open Access Workshop, 2019 – Unable to attend

- **Invited speaker:** Proposed attention workshop, CoSyNe, Lisbon, 2019.
- **Invited speaker:** University College London, London, 2019.
- **Invited session chair:** Synchrony and Interactive Rhythms Workshop, Leiden, The Netherlands, 2019.
- **Invited participant:** Synchrony and Interactive Rhythms Workshop, Leiden, The Netherlands, 2019.
- **Invited speaker:** Azim Premji University, Bengaluru, India, 2019.
- **Invited speaker:** Yorkshire Vision Network Meeting, York, 2018.
- **Invited session chair:** International Society Behavioral Ecology Conference, Minneapolis, 2018.
- **Prize:** Best postdoc paper prize, Faculty of Medical Sciences, Newcastle University, 2018.
- **Invited referee:** Student's Conference on Conservation Science, Bengaluru, 2017-2019.
- **Invited speaker:** Bristol University, Bristol, 2018.
- **Cover image:** Current Biology, 2018.
- **Invited speaker:** Indian Institute of Science, Bengaluru, India, 2018.
- **Invited speaker:** Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru, India, 2018.
- **Award (shortlisted)**: Times Higher Education Research Project of the Year (STEM) Award, 2017.
- **Invited fellowship reviewer:** Wissenschaftskolleg zu Berlin, College for Life Sciences, 2017.
- **Invited speaker:** Behaviour 2017, Estoril, Portugal, 2017.
- **Invited speaker:** Freie Universität, Berlin, 2017.
- **Invited review:** Stereopsis in animals: evolution, function and mechanisms, 2016.
- **Invited speaker:** 12th International Congress of Neuroethology, Uruguay, 2016.
- **Media coverage of research:** New York Times, The Atlantic, BBC Breakfast, BBC One, CBBC Newsround, National Geographic TV, The Financial Times, Wired Magazine, El País, Time Magazine, Quartz, The Telegraph, BBC Newcastle, BBC Teesside, BBC focus

Science and Technology, Public Radio International, Huffington Post (UK, US, France), Metro (UK, International), Nature, Science, Current Biology.

- **Cover image:** Royal Society Open Science, 2015.
- **Invited speaker:** Kyushu University, Fukuoka, Japan, 2014.
- **Invited speaker,** University College London, London, 2013.
- **Invited speaker:** Physics and Visual Search Symposium**,** Universitat Autonoma de Barcelona, Barcelona, 2013.
- **Invited speaker:** 10th International Congress of Neuroethology, Maryland, USA, 2012.
- **Cover image:** Hearing Research, 2012.
- **Invited speaker:** Karl Franzens University, Graz, Austria, 2011.
- **Award:** Shyamrao Kaikini Award for the best PhD thesis in Ecology.

INDEPENDENT EXTERNAL COLLABORATIONS

- **The Evolution of Attention**: Dr Michael Proulx (University of Bath) and Dr Alexandra Alisson De Sousa (Bath Spa University).
- **The Evolution of Self Deception**: Dr Shakti Lamba (University of Exeter).

PEER REVIEW ACTIVITY

PLoS Biology, Current Biology, Royal Society Interface, Methods in Ecology and Evolution, Biology Letters, Journal of Experimental Biology, Scientific Reports, Animal Behaviour, Behavioural Ecology, Psychological Science, Journal of Comparative Physiology A, Functional Ecology, Current Opinion in Insect Science, Ecological Entomology, PLoS One, Ethology, Resonance, Current Science.

ACADEMIC SERVICE

- Engage and Aspire Working Group member: 11/2019 - Present
- BAME Advisory Board member: 2019-Present

- Executive Committee member, Centre for Behaviour and Evolution, Newcastle University, 2015-present.
- Postdoctoral Committee, Faculty of Medical Sciences, Newcastle University, 2017-2019
- Equality, Diversity and Inclusion committee member, Institute of Neuroscience, Newcastle University, 2014 - present.
- Co-founder and member, Postdoctoral Committee, Newcastle University, 2014-2019.
- Joint Postdoctoral Representative, Research Strategy Group, Queen Mary University of London, 2012-2013.
- Co-organizer, Neurobiology, Behaviour and Cognition seminar series, Queen Mary University of London, 2012-2013.
- Associate Faculty Member for behavioural neuroscience, Faculty of 1000, 2011-2013.
- Joint Secretary, London Evolutionary Research Network, 2012.
- Secretary, Ecological Students Society, Indian Institute of Science, 2003-2006.

TEACHING AND MENTORSHIP

- **Training courses completed:** Learning and Teaching in Higher Education, Newcastle University Mentoring.
- Lectures on comparative cognition (Newcastle University, 2014 onwards), sensory ecology and animal communication (Queen Mary University of London, 2012-2013) and animal behaviour (Indian Institute of Science, 2006-2008).
- Design of module and evaluation of coursework for Comparative Cognition (Newcastle University, 2014 onwards).
- Designed and taught the post-graduate level course: "*An introduction to MATLAB*" with Dr. Natasha Mhatre (Western University, Ontario), Indian Institute of Science, 2009.
- **Postdoctoral supervisor:**

  1. Theo Robert, 'Attention-like processes in insects', 2020-2024

  2. Diana Umeton, 'Mantis stereo vision and object recognition', 2017-2018.
- **Doctoral co-supervisor**, Paul Hands, "Spatial, temporal and human factors affecting image quality and experience of 3D in television, cinema and gaming", 2013- 2016. **Outcome:** Successfully defended.

- **Postgraduate supervision:**

1. Cat Pattie, 'Modelling stereo correspondence in praying mantis visually-guided behaviour', 2020.
2. Ruaridh Hinchcliffe, 'Overconfidence and competition', 2020.
3. Dune Ganot, 'Selective attention in 3D in mantises', 2019.
4. Hai Jerry Tan, 'Looming and motion-in-depth perception in mantises', 2018.
5. Coline Joubier, 'Mantis perception of motion-in-depth', 2018.
6. Adam Simmons, 'Mantis stereo vision and object recognition', 2017-present.
7. Raúl Luna Del Valle, "Automated classification of mantis tracking behaviour", 2017.
8. Geoffrey Bissiana, "How the praying mantis takes distance into account when calculating prey size", 2015.
9. Jimmy Tampin, "Spatial vision in the praying mantis", 2015.
10. Judith Nicolas, "Investigating stereopsis in praying mantises using virtual stimuli", 2014.
11. Jonathan Pattrick, "Bumblebee working memory and multiple target types", 2012.

- **Undergraduate supervision:**

1. Tan Yi Ting, 'Selective spatial attention in mantises', 2020
2. Edward Hayden, "Skill Interest and Overconfidence", 2020
3. Sin Yap, 'The correspondence problem and mantis 3D vision', 2019.
4. Yie Jie Loh, 'Selective spatial attention in mantises', 2019.
5. Hui Chan, "Parallax contributions to solving the stereo correspondence problem in the mantis", 2018.
6. Olivia Harding, "Orientation of visual spatial frequency channels in the praying mantis", 2017.
7. Steven Errington, "Noise and motion detection in the praying mantis", 2016.
8. Jeffrey Wu, "High speed video tracking of size and distance measurement by the praying mantis", 2016.
9. Natalie Busby, "The contrast sensitivity function of the praying mantis", 2015.
10. Fjolla Kukaj, "The Rubber Hand Illusion: How gender affects the sense of body-ownership, and exploring whether the latter affects psychosocial attitudes", 2013.

11. Sara Khan, "Reward value and bumblebee visual search", 2012.
12. Mohammed Sayyidul Hasan: "The effect of flower saliency on bumblebee foraging", 2012.
13. Steffen Peterson: "Spatial release from masking in the anuran auditory system", 2010.

PUBLIC ENGAGEMENT

- **Relevant Training**: Completed courses in film-making and animation from the National Film and Television School. Hands-on workshops in film-making and editing at the Tyneside Cinema, Newcastle.
- **Science cartoons:** I run a blog featuring my cartoons of recent science papers with a focus on animal behaviour, neuroscience and psychology, 2011-Present: www.stuffscientistssay.blogspot.com.
- **Great North Museum Fellowship for Public Engagement.** As part of my fellowship, I collaborated on the 'Spineless' **exhibition** on invertebrates at The Great North Museum, Newcastle. I also developed an **animation movie** on insect behaviour with Roots and Wings, Newcastle (https://vimeo.com/141809158) and worked with Applied Comics etc. on their **comic** for the exhibition, 2015.
- **Invited public lectures/presentations:** Pint of Science, Newcastle; National Media Museum, Bradford; Hack the Senses, FabLab, London; Centre for Life, Newcastle Brain Zone launch; Barlow Lecture Series, Breeze Creatives, Newcastle; SciBar, British Science Association, Newcastle; Explore lifelong learning; Great North Museum, 2015-2020.
- **Theatre workshops and performances:**

- With Cap-A-Pie Theatre, Newcastle, I developed **a children's theatre production** about insect sensory ecology. We ran 'Insect Drama' workshops with children and adults in August 2015. The production entitled 'Six Legs' played in Newcastle in September 2016 and in primary schools in 2018. I also illustrated and wrote a **comic** as an accompanying program. We developed an **educational pack** supporting the school curriculum based on this show.

- Performing research theatre workshops with Cap-A-Pie Theatre– culminating in five **theatre performances** based on research at Newcastle University, 2014-2017.
- Assisted on developing productions - 'The Clearing' and 'Amol's Dreams' along with TheatreScience UK and the National Centre for Biological Sciences, Bangalore, 2009.

- **Writing:**

- **Winner, WriteScience Poetry Contest**: One of six winners selected in a science poetry competition. Winners were featured on BBC Get Creative, 2015: http://bbc.in/1lxB56i
- **Popular science articles**: Yahoo News India: http://tinyurl.com/pj2mhwy Open Magazine: https://tinyurl.com/ybceqdnt
- **Article on insects in Bollywood**: https://tinyurl.com/y8pbxpbg

- **STEM ambassador, 2014-2019.**
- **Brain Evolution vodcast – development and animation:** With Alexandra de Sousa (University of Bath), development of and animation for a Brain Evolution Vodcast funded by the European Society for Evolutionary Biology, 2014: http://tinyurl.com/px37qn2. Two time **finalists at the Evolution Film Festival**.
- **Joint secretary of the London Evolutionary Research Network** (**LERN: http://londonevolution.net/**), a group of students and postdoctoral researchers that organizes scientific talks and other events on aspects of Evolutionary Biology for the scientific community and the general public. Events included an evolutionary pub **quiz** and a **public debate** between leading national scientists, 2012-2013.
- **Talks at schools and colleges:** St Charles College, London, St Paul's Way Trust, London , Mahindra United World College India, Pune, Bangalore Association for Science Education, Bangalore, Government High School, Srirangapattinam, The Valley School, Bangalore, 2005-2013.
- **Wildlife rescue and film direction:** Volunteer for Snake Rescue Volunteers (SRV), an organization that mitigates human-animal conflict at the Indian Institute of Science, Bangalore. Arising from this I partially filmed, co-directed and edited a 15-minute film on snakes and the experiences of SRV called 'Snakes in the city', 2003-2008.