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## education and employment

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2012-present	Lecturer, School of Psychology University of Aberdeen, Scotland, UK
2009-12	Post-Doctoral Fellow; Advisor: Prof Rufin VanRullen Centre de Recherche Cerveau et Cognition, CNRS, Toulouse, France
2007-09	Post-Doctoral Fellow; Psychology and Neural Science; Advisor: Prof Denis Pelli New York University, New York NY
2002-07	PhD in Psychology: Cognition, Brain and Behaviour; Advisor: Prof Patrick Cavanagh Harvard University, Cambridge MA
1999-2001	M.S. in Consciousness Studies; First class with Distinction Birla Institute of Technology and Science, Pilani, India
1993-99	M.B., B.S. (Bachelor of Medicine, Bachelor of Surgery); First class with Distinction Manipal Academy of Higher Education, Manipal, India

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## grants and funding

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2020	The effect of the organisation of the Infero-Temporal cortex on perception: An EEG study, Carnegie Trust Undergraduate Vacation Scholarship to Mr Jirko Rubruck, £3,780
2020	The effect of grouping cues on numerosity estimation, Development Trust Discovering Research Psychology Scholarship to Ms Amanda Nordqvist £1,000
2019-22	Dealing with irrelevant information: An inter-domain examination of visual perception and cognitive psychology approaches, Carnegie Trust PhD Scholarship awarded to Ms. Danai Papadaki, ~£65,000
2019-23	Mechanisms of social interaction, BBSRC EASTBIO Doctoral Training Programme studentship awarded to Ms. Crystal Silver, ~£92,000
2019-20	Experiencing myself through you: Self-agency in social interactions, Carnegie Research Incentive Grant awarded to Bert Timmermans and me, £9,914
2019-21	Investigating the microstructure of human visual fields and generating low-vision applications, BBSRC International Partnering award granted to Dr Jasna

Martinovic, Dr Daniel Coates (Houston), Dr Josephine Reuther (post-doc) and me, £10,000

2019 Neural and behavioural oscillations in feature based visual attention, BBSRC/EASTBIO Research Experience Placements awarded to Justin Claydon, £2,500

2018-21 Neural mechanisms of long-range spatial vision: an investigation of perceptive, integrative and association fields across the lifespan, BBSRC grant awarded to Dr Jasna Martinovic (PI) and me (co-PI), £344,000.

2018 Free will and neural activity in consequential action, Wellcome Trust Vacation Scholarship awarded to Mr Thomas Binns, £2,000

2017-19 Erasmus Research Exchange internships granted to Ms. Paraskevi Batziou and Ms. Chloe Deroux

2016-20 The interplay between enhancement and suppression mechanisms in feature-based attentional selection, SGSSS ESRC Doctoral Studentship awarded to Mr Plamen Antonov, ~£80,000

2016-19 The oscillatory nature of consciousness explored through perceptual suppression, Anderson Postgraduate (PhD) Scholarship awarded to Ms Oana Iosif, ~£60,000

2014-18 Exploring the neural basis of visual crowding, Eastbio BBSRC Doctoral Training Programme awarded to Ms. Leili Soo, ~£92,000

2014-15 Neural correlates of Blindsight, Elphinstone Scholarship awarded to Mr Nicholas Hall, ~£5,000

2014 Developing Scientists Summer Placement awarded to Mr. Robert Ainsley, £1,000

2013-17 Mechanisms of Visual Crowding, Anderson Postgraduate (PhD) Scholarship awarded to Ms Josephine Reuther, ~£50,000

2012 Developing Scientists Summer Placement awarded to Mr. Sindre Henriksen, £1,000

2006-07 Graduate Society Dissertation Completion Fellowship, Harvard University, \$ 18,000

2007 Stimson Travel Grant for presenting at VSS conference 2007, \$ 500

2006 McMasters Travel Grant for presenting at VSS conference 2006, \$ 500

2005 Graduate Society Fellowship Summer Award, Harvard University, \$ 3,000

2004 Mind, Brain and Behavior Graduate Student Award, Harvard University, \$ 5,000

2003-04 Harvard University Graduate Summer Awards, \$ 3,000/yr

2002-07 Harvard University GSAS Merit Fellowship, \$ 70,000

2000-01 Sir Ratan Tata Trust Scholarship for the M.S. Program, INR 15,000

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## current projects

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EEG	Neural representation of object categories; Decision-making; Sense of agency; Motion perception; Colour, crowding, contours and ageing;
Behaviour	Crowding, Enumeration: estimation and subitizing

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## teaching experience

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Year 1	Introductory Psychology: Evolutionary Psychology module (2012-present) Introduction to Biological Sciences: Consciousness module (2014-2019)
Year 2	Advanced Psychology A: Methods and Applications: Methods in vision and attention (2012-2018) Advanced Psychology A: Theory and Concepts: Perception (2014-present)
Year 3	Perception small group tutorials (2012-present)
Years 3 and 4	Sixth Century Course on Consciousness (2014-present) Cognitive Neuroscience (2018-present) Critical review tutorials (Year 4)
Masters	Professional research skills I: Web design in academia (2012-17) Introduction to Bayesian Statistics (2017-present) Statistics tutorials MSc Psychological studies (2018-2020)
2004-06	Fall: Teaching Fellow, The Evolution of Human Nature. Taught by Professors Marc Hauser and Richard Wrangham, Harvard University Spring: Teaching Fellow, The Human Mind. Taught by Professor Steven Pinker, Harvard University

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## research supervision

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PhD	Josephine Reuther (2013-17) Leili Soo (2014-18; Second supervisor) Oana Iosif (2016-present) Plamen Antonov (2016-present; Second supervisor) Danai Papadaki (2019-present; Second supervisor) Crystal Silver (2019-present; Second supervisor)
Masters	Danai Papadaki (2018-19) Kyle Ferris (2017-18) Nicholas Jeerakun (2017-18)

Samuel Pitt (2013-14)  
Nicholas Hall (2014-15)

Level 4	Honours (research-based) thesis: 4-6 students per year
Level 3	Methodology B: Small group research projects (5-7 students per semester)

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## admin responsibilities

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Cognitive Neuroscience (Levels 3 and 4) Course-coordinator  
Director of Communications Team  
Member of Equality and Diversity Team  
Organiser for Perception and Attention group meetings  
Level 3 Methods Convenor (2016-18)  
Level 3 Methods B Course-coordinator (2017-18)  
Member of Ethics Committee (2014-19)  
Personal tutor (non-academic mentorship) for 20-25 students per year  
Internal and external examiner for PhD theses

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## professional affiliations

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Society for Neuroscience, Vision Sciences Society, European Conference on Visual Perception, Scottish Vision Group

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## reviewer

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Attention, Perception and Psychophysics; Cognition; Frontiers in Consciousness Research; Frontiers in Psychology; Journal of Cognitive Neuroscience; Journal of Experimental Psychology: Human Perception and Performance; Journal of Vision; Neuroimage; Proceedings of the Royal Society B; Psychological Science; Scientific Reports; Vision Research

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## publications

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1. Poncet, M. and **Chakravarthi, R.** (in press). Subitizing object parts reveals a second stage of individuation, *Psychonomic Bulletin and Review*.
2. Poncet, M., Fabre-Thorpe, M., and **Chakravarthi, R.** (2020). A simple rule to describe interactions between visual categories, *European Journal of Neuroscience*. <https://doi.org/10.1111/ejn.14890>
3. Antonov, P. A., **Chakravarthi, R.**, and Andersen, S. K. (2020). Too little, too late, and in the wrong place: Alpha band activity does not reflect an active mechanism of selective attention, *Neuroimage*, 219: 117006.
4. Lonngvist, B., Clarke, A., and **Chakravarthi, R.** (2020). Crowding in humans is unlike that in convolutional neural networks, *Neural Networks*, 126: 262 – 274.

5. **Chakravarthi, R.** and Bertamini M. (2020). Clustering leads to underestimation of numerosity, but crowding is not the cause, *Cognition*, 104195.
6. Reuther, J. and **Chakravarthi, R.** (2020). Response selection modulates crowding: a cautionary tale for invoking top-down explanations, *Attention, Perception and Psychophysics*, 82: 1763-1778.
7. Reuther, J., **Chakravarthi, R.**, and Hunt, A. R. (2020). The eye that binds: Feature integration is not disrupted by saccadic eye movements, *Attention, Perception and Psychophysics*. 82: 533 – 549.
8. **Chakravarthi, R.**, and Herbert, A. (2019). Two's company, three's a crowd: Individuation is necessary for object recognition, *Cognition*, 184: 69-82.
9. Soo, L., **Chakravarthi, R.**, and Andersen, S. K. (2018). Critical resolution: a superior measure of crowding, *Vision Research*, 153: 13-23.
10. Reuther, J. and **Chakravarthi, R.** (2017). Does self-prioritization affect perceptual processes? *Visual Cognition*, 5 (1-3): 381-398.
11. Jennings, B. J., Tsattalios, K., **Chakravarthi, R.**, and Martinovic, J. (2016). Combining S-cone and luminance signals adversely affects discrimination of objects within backgrounds, *Scientific Reports*, 6:20504. doi:10.1038/srep20504
12. Costa, S. L., Gonçalves, O. F., DeLuca, J. Chiaravalloti, N., **Chakravarthi, R.**, and Almeida, J. (2015). The temporal dynamics of visual processing in Multiple Sclerosis, *Applied Neuropsychology: Adult*, 23 (2): 133-140.
13. Rosen, S., **Chakravarthi, R.** and Pelli, D. G. (2014). The Bouma law of crowding, revised: Critical spacing is equal across parts, not objects, *Journal of Vision*, 14 (6): 10, 1-15
14. Reuther, J. and **Chakravarthi, R.** (2014). Categorical membership modulates crowding: evidence from characters, *Journal of Vision*, 14 (6): 5, 1-13
15. **Chakravarthi, R.** Carlson, T. A., Chaffin, J., Turret, J., and VanRullen, R. (2014). The temporal evolution of coarse location coding of objects: Evidence for feedback. *Journal of Cognitive Neuroscience*, 26 (10): 2370-2384
16. Van Vugt, M. K., **Chakravarthi, R.** and Lachaux, J. P. (2014). For whom the bell tolls: periodic reactivation of sensory cortex in the gamma band as a substrate of visual working memory maintenance, *Frontiers in Human Neuroscience*, 8: 696
17. **Chakravarthi, R.** and VanRullen, R. (2012). Conscious updating is a rhythmic process, *Proceedings of the National Academy of Sciences, USA*, 109 (26): 10599-10604
18. Freeman, J., **Chakravarthi, R.**, and Pelli, D. G. (2012). Compulsory pooling of crowded objects, *Attention, Perception and Psychophysics*, 72 (4): 379-396
19. **Chakravarthi, R.** and Pelli, D. G. (2011). The same binding in contour integration and crowding, *Journal of Vision*, 11 (8): 10, 1-12
20. **Chakravarthi, R.** and VanRullen, R. (2011). Bullet trains and steam engines: Exogenous attention zips but endogenous attention chugs along, *Journal of Vision*, 11 (4): 12, 1-12

21. **Chakravarthi, R.** and Cavanagh, P. (2009). Recovery of a crowded object by masking the distracters: Determining the locus of feature integration, *Journal of Vision*, 9 (10): 4, 1-9
22. **Chakravarthi, R.** and Cavanagh, P. (2009). Bilateral field advantage in visual crowding, *Vision Research*, 49 (13): 1638-1646
23. Vickery, T. J., Shim, W. M., **Chakravarthi, R.**, Jiang, Y. V., and Luedeman, R. (2009). Supercrowding: Weakly masking a target expands the range of crowding, *Journal of Vision*, 9 (2): 12, 1-15
24. **Chakravarthi, R.** and Cavanagh, P. (2007). Temporal properties of the polarity advantage effect in crowding, *Journal of Vision*, 7 (11): 1-12
25. **Ramakrishna, C.** (2002). Real latencies and facilitation, *Consciousness and Cognition*, 11(2): 300-303

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## manuscripts in progress

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1. Reuther, J. and **Chakravarthi, R.** (in preparation). The effect of distractor expectation on visual crowding.

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## invited talks

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| 2019 | Crowding in Deep Convolutional Neural Networks. Presented at the Workshop on crowding, EPFL, Lausanne, Switzerland, London              |
| 2016 | The role of higher order effects in visual crowding. Presented at UCL, London   |
| 2015 | Gestalt principles and feedforward processing. Presented at the University of Liverpool   |
| 2014 | The role of neural oscillations in visual processing. Presented at the University of Bangor, Wales                                      |
| 2013 | When one's company, two's a crowd in object recognition. Presented at Workshop on crowding, EPFL, Lausanne, Switzerland                 |
| 2012 | One rule to bind them all. Presented at the British Science Festival, Aberdeen UK   |
| 2011 | Object recognition. Presented at the School of Psychology, University of Aberdeen, Scotland   |
| 2011 | When one's company, two's a crowd in object recognition. Presented at CerCo day Symposium, Camaran, France                              |
| 2010 | Object recognition and visual attention. Presented at the Center for Brain and Cognitive Sciences, University of Allahabad, India       |
| 2007 | The role of attention in crowding. Presented at the Visual Attention lab, Harvard Medical School and Brigham & Women's Hospital, Boston |
| 2007 | Mechanisms in Visual Crowding. Presented at the Cognition, Brain and Behavior Research Seminar, Harvard University                      |

2006 The Resolution of Visual Consciousness. Presented at Mind, Brain, and Behavior Graduate Seminar Series, Harvard University

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## symposia and seminars organised

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- 2019 Sixth annual Anderson Lecture, School of Psychology (delivered by Prof David Dunning)
- 2014-17 School of Psychology (University of Aberdeen) Seminar series
- 2011 Mechanisms in crowding and blink: what can they tell us about consciousness? Symposium organized and chaired at the 14<sup>th</sup> annual meeting of Association for the Scientific Study of Consciousness, Toronto, Canada.
- 2005-06 Harvard Vision Lab Seminar Series. Organized bi-weekly talks by invited speakers.