

Curriculum vitae

Personal details

Name	Keith A. May
Date of birth	26th October 1969
Postal address	Department of Optometry and Visual Science, City University London, Tait Building, Northampton Square, London, EC1V 0HB, UK
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Research interests

I use psychophysical and computational techniques to investigate the early stages of processing performed by the human visual system. My research falls mainly into five related areas:

- Detection and representation of edges and texture boundaries
- Integration of edges and texture boundaries across space (contour integration)
- Coding of low-level image properties, e.g. contrast, colour and blur
- Efficiency of visual processing
- Visual attention

Education

A Levels	Physics (A), Maths (A), Further Maths (B), Chemistry (C)
BSc	BSc (first class) in Psychology, York University, UK, 1992
PhD	“Edge coding in human vision: A psychophysical and computational investigation”, Aston University, UK, awarded on 3rd June 2004. Supervisor: Mark Georgeson

Academic positions

12/7/1992	-	30/10/1992	Research assistant, BT Labs, Martlesham Heath, UK
1/11/1992	-	31/10/1993	Research assistant, St. Andrews University, UK
1/12/2003	-	31/12/2004	Research fellow, University College London, UK
16/5/2005	-	31/5/2006	Research fellow, McGill University, Montreal, Canada
1/8/2006	-	31/7/2008	Research assistant, Bradford University, UK
1/11/2008	-	12/02/2011	Research associate, University College London, UK
14/02/2011	-	present	Research assistant, City University, UK

Professional membership

- Vision Sciences Society
- Applied Vision Association

Technical skills

Experimental techniques	Psychophysics, computational modelling
Programming languages	MATLAB, C++ (including MATLAB mex files and Microsoft Foundation Classes), Pascal, Ada, BBC BASIC, 6502 assembly language
Markup languages	HTML, LaTeX
Graphics hardware	VSG, ViSaGe, Bits++, FE-1 stereo goggles
Graphics software	psychtoolbox, SDL (Simple DirectMedia Layer)

Teaching

- SPSS practical classes (Bradford University Psychology BSc course)
- Optometric Maths practical classes (Bradford University Optometry BSc course)
- Physiology of Vision and Perception practical classes (Bradford University Optometry BSc course)
- Supervision of undergraduate projects at Bradford, McGill and St. Andrews Universities

Reviewing

- One project grant application for the Wellcome Trust
- Abstracts for the following Applied Vision Association conferences: AGM 2007, 2010; Christmas meeting 2009
- Papers for the following journals (numbers of papers given in brackets): *Computer Vision and Image Understanding* (1), *Journal of Vision* (9), *Perception* (1), *PLoS Computational Biology* (1), *Proceedings of the Royal Society B* (1), *Vision Research* (2)

Conference sessions chaired

- European Conference on Visual Perception, Paris, 2003: “Low-level Processes” session
- Applied Vision Association Christmas Meeting, Aston University, 2003

Invited lectures

- BMVA/EPSRC Annual Summer School on Computer Vision 2009–2011: “Biological Vision”
- Psychology of Visual Art Summer School, Kingston University, 2010: “Motion, Blur, and Motion Blur”

Published papers

- May, K.A. & Zhaoping, L. (2011). Exploring the roles of saturating and supersaturating contrast-response functions in conjunction detection and contrast coding. *Journal of Vision*, **11**(9):11, 1–15.
- Zhaoping, L., Geisler, W.S. & May, K.A. (2011). Human wavelength discrimination of monochromatic light explained by optimal wavelength decoding of light of unknown intensity. *PLoS ONE*, **6**(5): e19248.
- May, K.A. & Zhaoping, L. (2009). Effects of surrounding frame on visual search for vertical or tilted bars. *Journal of Vision*, **9**(13):20, 1–19.
- May, K.A. & Hess, R.F. (2008). Effects of element separation and carrier wavelength on detection of snakes and ladders: Implications for models of contour integration. *Journal of Vision*, **8**(13):4, 1–23.
- Hess, R.F., Baker, D.H., May, K.A. & Wang, J. (2008). On the decline of 1st and 2nd order sensitivity with eccentricity. *Journal of Vision*, **8**(1):19, 1–12.
- May, K.A. & Hess, R.F. (2007). Ladder contours are undetectable in the periphery: A crowding effect? *Journal of Vision*, **7**(13):9, 1–15.
- May, K.A. & Hess, R.F. (2007). Dynamics of snakes and ladders. *Journal of Vision*, **7**(12):13, 1–9.
- Georgeson, M.A., May, K.A., Freeman, T.C.A. & Hesse, G.S. (2007). From filters to features: Scale–space analysis of edge and blur coding in human vision. *Journal of Vision*, **7**(13):7, 1–21.
- May, K.A. & Georgeson, M.A. (2007). Added luminance ramp alters perceived edge blur and contrast: A critical test for derivative-based models of edge coding. *Vision Research*, **47**(13), 1721–1731.
- May, K.A. & Georgeson, M.A. (2007). Blurred edges look faint, and faint edges look sharp: The effect of a gradient threshold in a multi-scale edge coding model. *Vision Research*, **47**(13), 1705–1720.
- Zhaoping, L. & May, K.A. (2007). Psychophysical tests of the hypothesis of a bottom-up saliency map in primary visual cortex. *PLoS Computational Biology*, **3**(4), e62.
- Perrett, D.I., May, K.A. & Yoshikawa, S. (1994). Facial shape and judgements of female attractiveness. *Nature*, **368**, 239–242.
- Thompson, P., May, K. & Stone, R. (1993). Chromostereopsis: A multicomponent depth effect? *Displays*, **14**(4), 227–234.

Published conference abstracts

- May, K.A. & Zhaoping, L. (2011). Contrast-response functions, Fisher information, and contrast decoding performance. *Journal of Vision*, 11(11):1172. (Poster presented at VSS 2011)
- Zeiner, K.M., Spitschan, M., May, K.A., Zhaoping, L. & Harris, J.M. (in press). Eye movements and reaction times for detecting monocular regions in binocularly viewed scenes. *Journal of Vision*, 11(11):326. (Poster presented at VSS 2011)
- May, K.A. (2011). Bayesian decoding of neural population responses explains many characteristics of contrast detection and discrimination. *Perception*, 40, ECVF Abstract Supplement, 51. (Talk presented at ECVF 2011)
- May, K.A., Zhaoping, L. & Hibbard, P.B. (2010). Binocular integration in human vision adapts to maximize information coding efficiency. *Perception*, 39, ECVF Abstract Supplement, 77. (Poster presented at ECVF 2010)
- May, K.A., Zhaoping, L. & Hibbard, P.B. (2010). Binocular integration in human vision adapts quickly to maximize coding efficiency. *Perception*, 39, 1149. (Talk presented at the AVA AGM 2010)
- Zhaoping, L. & May, K.A. (2010). Human monochromatic light discrimination explained by optimal signal decoding. *Perception*, 39, 1148-1149. (Talk presented at the AVA AGM 2010)
- May, K.A., Zhaoping, L. & Hibbard, P.B. (2010). Effects of image statistics on stereo coding in human vision. *Journal of Vision*, 10(7):359. (Poster presented at VSS 2010)
- May, K.A. & Hess, R.F. (2010). Implementing curve detectors for contour integration. *Perception*, 39(2), 270. (Poster presented at AVA Christmas Meeting 2009)
- May, K.A. & Hess, R.F. (2009). Implementing curve detectors for contour integration. *Journal of Vision*, 9(8):906, 906a. (Poster presented at VSS 2009)
- May, K.A. & McIlhagga, W.H. (2009). Probing edge blur perception with reverse correlation. *Perception*, 38(4), 621. (Talk presented at AVA AGM 2009)
- May, K.A. & Hess, R.F. (2008). Testing filter-overlap models of contour integration. *Journal of Vision*, 8(6):72, 72a. (Talk presented at VSS 2008)
- May, K.A. & Hess, R.F. (2007). Contour integration and crowding: A similar type of mechanism? *Perception*, 36(9), 1399. (Talk presented at the AVA AGM 2007)
- May, K.A. & Hess, R.F. (2007). Ladder contours are undetectable in the periphery. *Journal of Vision*, 7(9):113, 113a. (Talk presented at VSS 2007)
- May, K.A. & Hess, R.F. (2006). Snakes are as fast as ladders: Evidence against the hypothesis that contrast facilitation mediates contour detection. *Journal of Vision*, 6(6), 337a. (Poster presented at VSS 2006)
- May, K.A. & Zhaoping, L. (2005). Both cognitive factors and local inhibition mediate the effect of a surrounding frame in visual search for oriented bars. *Journal of Vision*, 5(8), 959a. (Poster presented at VSS 2005)
- Guyader, N., May, K.A. & Zhaoping, L. (2005). Top-down interference in visual search. *Journal of Vision*, 5(8), 951a. (Poster presented at VSS 2005)
- Zhaoping, L. & May, K. (2004). Irrelevance of feature maps for bottom up visual saliency in segmentation and search tasks. Program No. 20.1. *2004 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2004. Online.

- May, K.A. & Zhaoping, L. (2004). Investigating salience mechanisms by using the effects of surrounding frame on the tilted-vertical asymmetry in visual search. *Perception*, 33, Supplement, 12. (Talk presented at ECVP 2004)
- May, K.A. & Georgeson, M.A. (2004). Perceiving edge contrast. *Perception*, 33, 757. (Talk presented at AVA Christmas Meeting 2003)
- May, K.A. & Georgeson, M.A. (2003). Perceiving edge blur: Gaussian-derivative filtering and a rectifying nonlinearity. *Perception*, 32, Supplement, 46. (Talk presented at ECVP 2003)
- May, K.A. & Georgeson, M.A. (2003). Perceiving edge blur: Linear filtering and a rectifying nonlinearity. *Perception*, 32, 388. (Talk presented at AVA Christmas Meeting 2002)
- Georgeson, M.A., May, K.A. & Barbieri-Hesse, G.S. (2003). Perceiving edge blur: The Gaussian-derivative template model. *Journal of Vision*, 3(9), 360a.

Published book chapters

- Zhaoping, L., May, K.A. & Koene, A. (2009). Some fingerprints of V1 mechanisms in the bottom up saliency for visual selection. In Heinke, D. & Mavritsaki, E. (Eds.), *Computational Modelling in Behavioural Neuroscience: Closing the gap between neurophysiology and behaviour* (pp. 137–164). London: Psychology Press. ISBN 978-1-84169-738-3.
- Zhaoping, L. & May, K.A. (2008). Testing the hypothesis that V1 creates a bottom-up saliency map. In Bharath, A. & Petrou, M. (Eds.), *Next Generation Artificial Vision Systems: Reverse Engineering the Human Visual System*. London: Artech House. ISBN 978-1-59693-224-1.