

Current position

Assistant professor, Durham University, 09/2015–
University researcher, University of Helsinki, 09/2020–

Education

Degrees

- 27.08.2019 Title of Docent in Cognitive Neuroscience
Faculty of Medicine, University of Helsinki
- 31.01.2009 Dr rer. nat. (PhD in Natural Sciences)
Justus-Liebig University Giessen, Germany (Summa cum laude)
- 01.06.2004 MA (psych.), University of Helsinki, Finland (With distinction)

Pedagogical studies

2015/16, EDUC40320: Learning and teaching in higher education, 20 ct, Durham University
2016/17, EDUC40420: Student learning as a foundation for reflexive practice, 20 ct, Durham University

Short courses

- 27.6-5.7.2012 Computational Vision Summer School
Bernstein Center for Computational Neuroscience, Tuebingen
Freudenstadt, Germany
- 5.-19.7.2007 Structure, Function and Development of the Visual System
Cold Spring Harbor Laboratory
Cold Spring Harbor, USA
- 3.-15.9.2006 European Summer School on Visual Neuroscience
Rauischholzhausen, Germany

Languages

Finnish (native), Swedish (good), English (excellent), German (good), Spanish (good), French (satisfactory), Italian (basics)

Previous positions and mobility

- 2015 – 2020 Academy Research Fellow
Department of Psychology and Logopedics, Faculty of Medicine, University of Helsinki
Founded the Color and Material Perception Lab at the Department of Psychology and Logopedics.

2013 – 2015	<u>Postdoctoral fellow</u> Epstein lab, Center for Cognitive Neuroscience, University of Pennsylvania <i>Designed and ran fMRI experiments, analyzed fMRI data with univariate and multivariate analysis, wrote manuscripts, presented at conferences.</i>
2011 – 2013	<u>Postdoctoral fellow</u> Allred lab, Department of Psychology, Rutgers University (Camden) <i>Designed and ran psychophysics experiments, conducted advanced data analysis, supervised research students, wrote manuscripts, presented at conferences.</i>
2009 – 2011	<u>Postdoctoral fellow</u> Brainard lab, Department of Psychology, University of Pennsylvania <i>Designed and ran psychophysics experiments, conducted advanced data analysis, used physically-based rendering to create realistic 3D scenes, set up high-dynamic-range display, wrote manuscripts, presented at conferences.</i>
2005 – 2009	<u>Research assistant</u> Department of General Psychology, Justus-Liebig-Universitaet Giessen, Germany <i>Designed and ran psychophysics experiments, calibrated monitors, analyzed data, wrote manuscripts, presented at conferences.</i>
2003 – 2005	<u>Research scientist</u> Nokia Research Center <i>Investigated performance in autostereoscopic small displays; readability of small displays while walking; mobile phone ergonomics. Designed and ran behavioral and eye-movement experiments, analyzed data, wrote up internal reports and conference papers. Fed research outcomes back to applications teams.</i>

Professorial activities and achievements

Examining and hiring panels

- Member of hiring panel for Postdoctoral Research Assistant in Multisensory Perception and Learning, Department of Psychology, Durham University, 15.06.2020
- Member of hiring panel for Research Assistant in Multisensory Perception and Learning, Department of Psychology, Durham University, 25.11.2019
- Member of hiring panel for Teaching Fellow in Psychology, Department of Psychology, Durham University, 24.10.2019
- External member in hiring panel for Assistant Professor in Musicology, Department of Music, Durham University, 01.11.2018
- External examiner of PhD thesis at the Computer Science department, University College London 30.9.2019
- Internal examiner of PhD thesis at Department of Psychology, Durham University, 10.01.2017

Thesis supervision

- PhD student Lari Virtanen, University of Helsinki, 2019-2023
- PhD student Becca Wedge-Roberts, Durham University, 2017-2020
- PhD student Alessia Cacace, Durham University, 2016-2019
- PhD student Josefina Castello-Serrano, Durham University, 2016-2020

- Master student Alan Chi, Durham University, 2019-2020
- Master student Yiheng Yu, Durham University, 2016-17
- In addition, several UG dissertations per year since 2015 at Durham

Experience of leadership

- Director, Centre for Vision and and Visual Cognition, Durham University (2018–)
- Technical and operations director, Durham Centre for Imaging, Durham University (2018–)
- Editor for Frontiers in Perception Science (section of Frontiers in Neuroscience and Frontiers in Psychology)
- Guest editor for Journal of Vision

Reviewer

- Grants: National Science Foundation, Israel Science Foundation, Estonian Research Council, Leverhulme
- Conference abstracts and proceedings: Vision Sciences Society, European Conference on Visual Perception, and Cognitive Science
- Journal reviews: Nat Neurosci, Nat Hum Behav, PNAS, Curr Biol, PLoS Comp Biol, PLoS ONE, J Vis, Vis Res, J Optic Soc Am A, Cogn Psych, Cogn Sci, Perception, i-Perception, Cortex, Opth Physiol Opt, Neuropsychologia, Seeing Perceiving, Psychol Res, TiCS, Color Res App, SIGCHI, Vision

Memberships

- Fellow of the Higher Education Academy of Great Britain, 2018–
- Biophysical Sciences Institute, Durham, 2018–
- Founding member and treasurer of the Colour Collective UK, 2016–
- Vision Sciences Society, 2007–
- Society for Neuroscience, 2014
- Association for Psychological Science, 2011-2013

Organized workshops and conferences

- Organized the workshop "Visual Perception: Color, Material, and Quality", at University of Helsinki, 31.8.2018
- Co-organized the international conference "The Probabilistic Brain" at Durham University, 23.-24.3.2018
- Organized the symposium "Perceptual estimation in a noisy world: Novel insights from paradigms integrating perception, learning, and memory" at the European Conference on Visual Perception, August 2017.

Invited conference talks

- *Learning and Memory in Color Perception*
Symposium "Understanding color"
Optical Society of America Fall Vision Meeting, Washington DC, USA, 20.09.2019
- *Learning and Memory in Color Perception*
Symposium "Color vision in naturalistic objects and environments"
Asia Pacific Conference on Vision, Osaka, Japan, 31.07.2019
- *The role of prior knowledge in color perception*
Chiba University Vision Symposium, Chiba, Japan, 08.01.2019

- *Learning and memory in color perception*
Chiba University Vision Symposium, Chiba, Japan, 18.01.2018
- *Is it blue or green? Investigating how priors for object color are learned from visual input*
Symposium "Perceptual estimation in a noisy world: Novel insights from paradigms integrating perception, learning, and memory"
European Conference on Visual Perception, Berlin, Germany, 30.08.2017
- *Learning and memory in color perception*
Colour in Mind, Tuebingen, Germany, 23.09.2016
- *Learning and memory in color perception*
Colour group GB January meeting, London, UK, 13.01.2016
- *Color memory and visual processing*
Symposium "Color memory"
Fall Vision meeting of the Optical Society of America, San Jose, USA, 17.10.2015
- *The role of memory in surface color perception*
Symposium "Advances in studying the perception of surface properties"
European Conference on Visual Perception, Belgrade, Serbia, 25.08.2014
- *Higher-level influences on color appearance and color constancy*
Workshop on Perceptual Constancies, University of Pennsylvania, 20.02.2009

Regular conference talks

- *Robust behavioral and neural integration of color and gloss cues for object classification*
Vision Sciences Society Meeting 2020, St. Pete Beach, FL, USA
- *Quickly-forming, shape-dependent memory biases in color perception*
Vision Sciences Society Meeting 2017, St. Pete Beach, FL, USA
- *Effects of short-term memory on hue perception*
Vision Sciences Society Meeting 2013, St. Pete Beach, FL, USA
- *Relationship between constancy and memory for stimulus hue and lightness*
European Conference on Visual Perception 2012, Alghero, Italy
- *Shape modulates the effect of lightfield on perceived glossiness*
Vision Sciences Society Meeting 2011, St. Pete Beach, FL, USA
- *Interaction of diffuse and specular reflectance in the perception of object lightness and glossiness*
Vision Sciences Society Meeting 2010, St. Pete Beach, FL, USA
- *Munsell chip classification reveals stable colour categories under illuminant changes*
European Conference on Visual Perception 2008, Utrecht, The Netherlands

Invited departmental talks

- *Learning object color*
Department of Psychology, Justus Liebig University Giessen, Germany, 3.6.2020 (via Zoom)
- *Neural integration of color and gloss cues in object identification*
Department of Neuroscience and Biomedical Engineering, Aalto University, Helsinki, Finland, 29.09.2019
- *Color perception for object recognition*
Department of Computer Science, University College London, London, UK, 6.11.2019
- *Learning and memory in color perception*
Department of psychology, Glasgow University, 6.11.2017
Tuebingen University, Germany, 10-13.04.2017
Department of Psychology, University of Sussex, 21.11.2016
Department of Psychology, Giessen University, Germany, 11.02.2016
Institute of Neuroscience, Newcastle University, 8.11.2016
Department of Psychology, University of York, 15.11.2016
Technical University of Tampere, Finland, 22.03.2016

- *Perception of surface reflectance properties under real-world illumination*
Department of Psychology, Giessen University, Germany, 27.11.2009

Departmental administration (Psychology, Durham University)

- Member of the Departmental Ethics Committee, 2020–
- Athena SWAN Self-Assessment Team (Equality and Diversity Charter), 2017–
- Year tutor, 2015–
- Module leader, Biological Psychology, 2019/20
- Module leader, Neuropsychology and perceptual processes, 2017/18
- Academic advisor to 8-10 psychology students per level every year, 2015–

Teaching

Lecture courses

- 2016– Biological Psychology and Perception
 2016– Neuropsychology and perceptual processes
 2016-17 Current issues in cognitive neuroscience
 2016– Techniques in cognitive neuroscience (fMRI practical)
 2017– Techniques in cognitive neuroscience (Matlab)

Department of Psychology, Durham University

- 2012-2013 Method and Theory (Research methods in psychology)
 Department of Psychology, Rutgers University

Tutorials

- 2017-18 Critical Analysis (MSc Cognitive neuroscience)
 2015-16 Topics in Cognitive Psychology (2nd year UG)
 2015– Biological Psychology and Perception (2nd year UG)
 2015– Classic papers in psychology (1st year UG)

Department of Psychology, Durham University

Lecture courses as TA

- 2002-03 Introduction to perception

Tutorials as TA

- 2001-03 Methods in psychophysics and experimental psychology
 Department of Psychology, University of Helsinki

Public appearances, tutorials, talks

- Talk “Color perception and memory” at Experience Colours!, Aalto Experience Platform, 7.11.2018
- Co-hosted Pint of Science (public science event) in Durham, May 2018
- Tutorial “Introduction to mechanisms of color constancy” at Chiba University, Japan, 10.1.2018
- Talk “Is it blue? Is it green? How context and memory affect color perception” at The Colour Green, Colour Group (GB) Northern Chapter public seminar, Newcastle UK, 27.9.2017
- Faculty in the Second Norwegian summer institute of Mind and Language: Cognition and Computation, Oslo, August 1-11, 2017.

External research funding

- Faculty of Medicine (University of Helsinki): bridge funding for Academy Research fellows, 09/2020-08/2021

- Faculty of Medicine (University of Helsinki): small equipment grant, April 2019, €13,600
- “ travel award, April 2018, April 2019 (€3,500)
- “ pump priming grant, October 2018 (€4,950), January 2018 (€5,500)
- Durham University internationalization travel award, April 2017 (£1,000)
- Academy Research Fellow, Academy of Finland, 2015-2020 (€434,485)
- Young investigator award, Emil Aaltonen foundation, Finland, 2009 (€24,000)

Prizes and awards

- Hector Fellow Academy speaker award at conference “Colour in Mind”, Tuebingen, 24.9.2016
- Best dissertation in psychology and social science, Justus-Liebig-University Giessen, 2009

Publications

Publication statistics

- 1430 citations, h-index 12, i10-index 17 (google scholar, 07.09.2020)
- 22 publications in peer-reviewed journals
- 3 peer-reviewed conference proceedings
- 2 book chapters
- 1 encyclopedia entry (Encyclopedia of Color Science and Technology)
- 1 commentary (Behavioral and Brain Sciences)
- over 30 published conference abstracts

Peer-reviewed articles

1. Wedge-Roberts, R., Aston, S., Beierholm, U., Kentridge, R., Hurlbert, A., Nardini, M. & **Oikkonen, M.**. Specular highlights improve colour constancy when other cues are weakened. *Journal of Vision*, *in press*.
2. Aston, S.*, Denisova, K.*, Hurlbert, A.*, **Oikkonen, M.*†**, Pearce, B.*, Rudd, M.*, Werner, A.* & Xiao, B.* Exploring the determinants of color perception using #thedress and its variants: the role of spatio-chromatic context, chromatic illumination, and material-light interaction. *Perception*, *in press*.
All authors contributed equally and are ordered alphabetically.
† Corresponding author
3. Virtanen, L, **Oikkonen, M**, & Saarela, T. P. Color ensembles: Sampling and averaging spatial hue distributions. *J Vis* 2020, 20(5):1, 1-14. **Open access**.
4. Peromaa, T, & **Oikkonen, M**. Red color facilitates the detection of facial anger – but how much? *PLoS ONE* 2019, 14(4):e0215610. **Open access**.
5. Mattar, MG⁺, **Oikkonen, M⁺**, Aguirre, GK, Epstein, RA. Adaptation decorrelates shape representations. *Nat Comm* 2018, 9:3812. **Open access**. ⁺ Equal author contribution
6. Witzel, C, **Oikkonen, M**, Gegenfurtner, KR A Bayesian model of the memory color effect. *i-Perception* 2018, 9: 1-16. **Open access**.
7. **Oikkonen, M**, Saarela, TP. Ennakkotieto ja päättely värihavainnossa. *Niin ja Näin* 2018, 2: 57-66.
8. **Oikkonen, M**, Aguirre, GK, & Epstein, RA. Expectation modulates repetition suppression under high stimulus variability. *J Vis* 2017, 17(6):10.1-16. **Open access**.
9. **Oikkonen, M**, Saarela, TP, & Allred, SR. Perception-memory interactions reveal the computational strategy of surface reflectance perception. *J Vis* 2016, 16(3):38.1-21. **Open access**.
10. Bae, G-Y, **Oikkonen, M**, Allred, SR, Flombaum, JI. Why some colors are more memorable than others: Stimulus-specific category effects in color working memory and perception. *JEP: General* 2015, 144:744-763.
11. Allred SR, **Oikkonen, M** The effect of memory and context changes on color matches to real objects. *Atten Percept Psychophys* 2015, 77:1608-1624.

12. **Oikkonen, M**, McCarthy, P, Allred, SR. The central tendency bias in color perception: Effects of internal and external noise. *J Vis* 2014, 14(11):5.1-15. **Open access.**
13. Bae, G-Y, **Oikkonen, M**, Allred, SR, Wilson, C, Flombaum, JI. Stimulus-specific variability in color working memory with delayed estimation. *J Vis* 2014, 14:1-23. **Open access.**
14. **Oikkonen, M**, Allred, SR. Short-term memory affects color perception in context. *PLoS ONE* 2014, 9(1):e8648. **Open access.**
15. Allred SR, **Oikkonen, M**. The effect of background and illumination on color appearance of real, 3D objects. *Front Psychol (Section Perception Science)* 2014, 4:821. [In Research topic: Colour and form perception: straddling the boundary]. **Open access.**
16. **Oikkonen, M**, Brainard, DH. Joint effects of illumination geometry and object shape in the perception of surface reflectance, *i-Perception* 2011, 2:1014-1034. **Open access.**
17. **Oikkonen, M**, Brainard, DH. Perceived surface glossiness and lightness under real-world illumination. *J Vis* 2010, 10(9):5.1-19. [Special issue: Perception of surface color and material properties.] **Open access.**
18. **Oikkonen, M**, Witzel, C, Hansen, T, Gegenfurtner, KR. Categorical color constancy for real surfaces. *J Vis* 2010, 10(9):16.1-22. [Special issue: Perception of surface color and material properties.]. **Open access.**
19. **Oikkonen, M**, Hansen, T, & Gegenfurtner, KR. Categorical color constancy for simulated surfaces. *J Vis* 2009, 9(12):6.1-18. **Open access.**
20. **Oikkonen, M**, Hansen, T, & Gegenfurtner, KR. Color appearance of familiar objects: Effects of object shape, texture, and illumination changes. *J Vis* 2008, 8(5):13.1-16. **Open access.**
21. Hansen, T, **Oikkonen, M**, Walter, S & Gegenfurtner, KR. Memory modulates color appearance. *Nat Neurosci* 2006, 9: 1367-1368.
22. **Oikkonen, M**, Mustonen, T. Estimating text legibility of a mobile display on the basis of translational vibration caused by walking. *J Soc Inf Disp* 2005, 13:657-663.

Conference proceedings

1. Vuori, T, **Oikkonen, M**. The effect of image sharpness on quantitative eye-movement data and on image quality evaluation while viewing natural images. *Electronic Imaging 2006, Image Quality and System Performance III 2005*, 6059. San Jose, California, USA.
2. Mustonen, T, **Oikkonen, M**, Häkkinen, J. Examining mobile phone text legibility while walking. *Proc ACM CHI 2004*, 2:1243-1246. New York: ACM Press.
3. Vuori, T, **Oikkonen, M**, Pölönen, M, Siren, A, Häkkinen, J. Can eye movements be quantitatively applied to image quality studies? *NordiCHI2004*, 2004, 335-338, Tampere, Finland.

Book chapters and commentaries

1. **Oikkonen, M.** Learning and knowledge in color constancy. *Encyclopedia of color science and technology*, 2nd ed, MacDonald, L. (ed.), (in press).
2. **Oikkonen, M**, Ekroll, VE. Color constancy and contextual effects on color appearance. *Springer Series in Vision Research: Human Color Vision 2016*, J. Kremers, R. C. Baraas, & N. J. Marshall (Eds.), 159-188.
3. **Oikkonen, M**, Hansen, T, & Gegenfurtner, KR. High-level perceptual influences on color appearance. In SR Allred & G Hatfield (Eds.), *Visual Experience 2012*, Oxford: Oxford University Press. pp. 179-198.
4. Witzel, C, **Oikkonen, M** & Gegenfurtner, KR. Memory colours affect colour appearance. Commentary on Firestone, C., & Scholl, B. Cognition does not affect perception: Evaluating the evidence for 'top-down' effects. *Behav Brain Sci* 2016, 39, doi:10.1017/S0140525X15002587.

Other relevant information

Experimental skills

Methods: Visual psychophysics, fMRI adaptation, fMRI MVPA, color science, probabilistic models

Programming: Matlab, Psychtoolbox, CRS toolbox, html, basics in Python and C++

Rendering: Radiance, RenderToolbox, Mitsuba

OS: Linux/Unix, MacOS, Windows