

## Current position

Principal color scientist  
Microsoft Finland  
Keilalahdentie 2-4, 02150 Espoo, Finland  
molkkonen@microsoft.com

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## Education

### Degrees

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|------------|---|
| 27.08.2019 | Title of Docent in Cognitive Neuroscience<br>Faculty of Medicine, University of Helsinki              |
| 31.01.2009 | Dr rer. nat. (PhD in Natural Sciences)<br>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

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

### Languages

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

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## Previous positions and mobility

2015 – 2021	<u>Assistant professor</u> Department of Psychology, Durham University
2015 – 2020	<u>Academy Research Fellow</u> Department of Psychology and Logopedics, Faculty of Medicine, University of Helsinki <i>Founded the Color and Material Perception Lab at the Department of Psychology and Logopedics.</i>
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>

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## Professorial activities and achievements

### Examining and hiring panels

- Internal examiner of PhD thesis at Department of Psychology, Durham University, 16.7.2021
- PhD thesis committee member, PhD Candidate Jussi Tiihonen (supervisor: Petri Ala-Laurila), Aalto University, 2021 →
- Member of hiring panel for Assistant Professor in Cognitive Neuroscience at the Department of Psychology, Durham University, February 2021
- Member of hiring panel for Postdoctoral Research Assistant in Multisensory Perception and Learning, Department of Psychology, Durham University, 14.01.2021
- 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 Saija Niemi, University of Helsinki, 2023-
- PhD student Lari Virtanen, University of Helsinki, 2019-
- PhD student Becca Wedge-Roberts, Durham University, 2017-2021
- PhD student Alessia Cacace, Durham University, 2016-2019
- PhD student Josefina Castello-Serrano, Durham University, 2016-2021
- MA student Saija Niemi, University of Helsinki, 2020-2021
- MSc student Alan Chi, Durham University, 2019-2020
- MSc student Yiheng Yu, Durham University, 2016-2017
- In addition, several UG dissertations per year at Durham, 2015-2021

### **Experience of leadership**

- Acting president of the Finnish Colour Society (2023–)
- Director, Centre for Vision and and Visual Cognition, Durham University (2018–2021)
- Technical and operations director, Durham Centre for Imaging, Durham University (2018–2021)
- 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, Cognition, Sci Rep, Perception, i-Perception, Cortex, Opth Physiol Opt, Neuropsychologia, Seeing Perceiving, Psychol Res, TiCS, Color Res App, SIGCHI, Vision

### **Memberships**

- Member and vice-president of the Finnish Colour Society, 2023–
- Fellow of the Higher Education Academy of Great Britain, 2018–
- Biophysical Sciences Institute, Durham, 2018–2021
- Founding member and treasurer of the Colour Collective UK, 2016–2021
- Vision Sciences Society, 2007–2021

### **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 since 2015**

- *Color constancy: cues, priors, and development*  
Colour Group GB January Vision Meeting, 6.1.2021
- *Integration of surface color and gloss cues for object classification*  
Colour Group GB January Vision Meeting, 8.1.2020 (could not attend due to illness)
- *Learning and Memory in Color Perception*  
Symposium "Understanding color"  
Optical Society of America Fall Vision Meeting, Washington DC, USA, 20.9.2019
- *Learning and Memory in Color Perception*  
Symposium "Color vision in naturalistic objects and environments"  
Asia Pacific Conference on Vision, Osaka, Japan, 31.7.2019
- *The role of prior knowledge in color perception*  
Chiba University Vision Symposium, Chiba, Japan, 08.1.2019
- *Learning and memory in color perception*  
Chiba University Vision Symposium, Chiba, Japan, 18.1.2018
- *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, 30.8.2017
- *Learning and memory in color perception*  
Colour in Mind, Tuebingen, Germany, 23.9.2016
- *Learning and memory in color perception*  
Colour group GB January Vision meeting, London, UK, 13.1.2016
- *Color memory and visual processing*  
Symposium "Color memory"  
Fall Vision meeting of the Optical Society of America, San Jose, USA, 17.10.2015

### **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

- *Vision science in Mixed Reality – challenges and opportunities*  
Department of Psychology, Justus Liebig University Giessen, Germany, 26.10.2023
- *Learning object color*  
Department of Psychology, Justus Liebig University Giessen, Germany, 3.6.2020
- *Neural integration of color and gloss cues in object identification*  
Department of Neuroscience and Biomedical Engineering, Aalto University, Helsinki, Finland, 29.9.2019
- *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, 11.2.2016  
Institute of Neuroscience, Newcastle University, 8.11.2016  
Department of Psychology, University of York, 15.11.2016  
Technical University of Tampere, Finland, 22.3.2016
- *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, 2020–2021
- Athena SWAN Self-Assessment Team (Equality and Diversity Charter), 2017–2021
- Year tutor, 2015–2021
- 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, 2015–2021

## Teaching

### Lecture courses

2016–2021            Biological Psychology and Perception  
2016–2021            Neuropsychology and perceptual processes  
2016-17            Current issues in cognitive neuroscience  
2016–2021            Techniques in cognitive neuroscience (fMRI practical)  
2017–2021            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 (2<sup>nd</sup> year UG)  
2015–2021            Biological Psychology and Perception (2<sup>nd</sup> year UG)  
2015–2021            Classic papers in psychology (1<sup>st</sup> year UG)  
Department of Psychology, Durham University

### Lecture courses as TA

2002-03            Introduction to perception

### Tutorials as TA

### Public appearances, tutorials, talks

- Optical Society of America Webinar “Computational color constancy” 22.06.2021
- 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 (€808,841 €)

### Prizes and awards

- Hector Fellow Academy speaker award at conference “Colour in Mind”, Tuebingen, 24.9.2016
  - Young investigator award, Emil Aaltonen foundation, Finland, 2009 (€24,000)
  - Best dissertation in psychology and social science, Justus-Liebig-University Giessen, 2009
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## Publications

### Publication statistics

- 2101 citations, h-index 16, i10-index 24 (google scholar, 6.11.2023)
  - 24 articles 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
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## Other relevant information

### Experimental skills

**Methods:** VR/AR, Visual psychophysics, fMRI adaptation, fMRI MVPA, color science, probabilistic models

**Programming:** Matlab, Python, Psychtoolbox, Psychopy, CRS toolbox, html

**Rendering:** Radiance, RenderToolbox, Mitsuba

**OS:** Linux/Unix, MacOS, Windows