## PERSONAL DETAILS

Family Name, First name: Bracci Stefania

Researcher unique identifier(s):
- MIUR: https://loginmiur.cineca.it/front.php/curriculum.html?user=RIC798724&SESSION=gSIiezyHPZwTM8sYlf5z1qxUn8XAekUN
- ORCID: https://orcid.org/0000-0003-1435-2536
- Google Scholar: https://scholar.google.it/citations?view_op=list_works&hl=en&hl=en&user=ECBBsv8AAAAJ&sortby=pubdate
- SCOPUS: https://www.scopus.com/authid/detail.uri?authorId=36796386800

### Education:
2008–2011 PhD in Cognitive Neuroscience
Department of Psychology, Northumbria University, UK

2005–2007 MSc Neuropsychology and Cognitive Rehabilitation
Psychology Department, Bologna University, Italy

### Current Position:
2022–now Assistant Professor (RTD-B),
CIMeC, UNITN, Italy

### Previous Positions:
2019–2022 Assistant Professor (RTD-A),
CIMeC, University of Trento, Italy
2016–2019 FWO Research fellow (Flanders Research Foundation)
Laboratory of Biological Psychology, KU Leuven, Belgium
2014–2016 Postdoctoral fellow
Laboratory of Biological Psychology, KU Leuven, Belgium
2011–2013 Postdoctoral fellow
CIMeC, University of Trento, Italy

### Career Breaks:
2015 Maternal leave (4 months)
2018 Maternal leave (4 months)

## RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

### Research achievements
Below, I reported the 10 publications most relevant for the proposed project, which show my extensive experience in both cognitive and computational neuroscience of object vision. Metrics such as the FWCI and the percentile show the appreciation of this work by the scientific community.

FWCI (Field-Weighted Citation Impact): A value greater than 1.00 means the document is more cited than expected according to the average (this score is not available for most recent publications).

1) **Bracci S,** Mraz J, Zeman A, Leys G, Op de Beeck HP. The representational hierarchy in human and artificial systems in the presence of object-scene regularities (2023). *PLOS Computational Biology*. https://doi.org/10.1371/journal.pcbi.1011086

2) **Bracci S**, Op de Beeck HP. Understanding human object vision: a picture is worth a thousand representations (2023). *Annual Review of Psychology.* https://doi.org/10.1146/annurev-psych-032720-041031.
*FWCI: 5.53; 94th percentile*

3) **Bracci S**, Ritchie, J.B., Kalfas I, and Op de Beeck H. The ventral visual pathway represents animal appearance over animacy, unlike human behavior and deep neural networks (2019). *The Journal of neuroscience.* https://doi.org/10.1523/JNEUROSCI.1714-18.2019
*FWCI: 1.75; 85th percentile*

4) **Bracci S**, Daniels N, and Op de Beeck H. Task Context Overrules Object- and Category-Related Representational Content in the Human Parietal Cortex (2017). Cerebral Cortex. https://doi.org/10.1093/cercor/bhw419.
*FWCI: 2.97; 93th percentile*

5) Kubilius J, **Bracci S**, and Op de Beeck H. Deep Neural Networks as a Computational Model for Human Shape Sensitivity (2016). PLOS Computational Biology. https://doi.org/10.1371/journal.pcbi.1004896

*FWCI: 6.65; 98th percentile*

6) **Bracci S**, and Op de Beeck H. Dissociations and associations between shape and category representations in the two visual pathways (2016). Journal of Neuroscience. DOI: https://doi.org/10.1523/JNEUROSCI.2314-15.2016
*FWCI: 5.29; 97th percentile*

7) **Bracci S**, Caramazza A and Peelen MV. Representational Similarity of Body Parts in Human Occipitotemporal Cortex (2015). Journal of Neuroscience. https://doi.org/10.1523/JNEUROSCI.4698-14.2015
*FWCI: 0.84; 67th percentile*

8) **Bracci S,** and Peelen MV. Body and object effectors: the organization of object representations in high-level visual cortex reflects body-object interactions (2013). Journal of Neuroscience. https://doi.org/10.1523/JNEUROSCI.1322-13.2013
*FWCI: 1.48; 81th percentile*

9) **Bracci S**, Cavina-Pratesi C, Ietswaart M, Caramazza A and Peelen MV (2012). Closely overlapping responses to tools and hands in left lateral occipitotemporal cortex. J Neurophysiol. DOI: 10.1152/jn.00619.2011

*FWCI: 2.61; 90th percentile*

10 ***Bracci S**, Ietswaart M, Peelen MV and Cavina-Pratesi C (2010). Dissociable neural responses to hands and non-hand body parts in human left extrastriate visual cortex. J Neurophysiol. doi:10.1152/jn.00215.2010
*FWCI: 3.21; 93th percentile*
**Highlighted in F1000 'must read'.

Throughout my research career, I used functional neuroimaging to investigate the problem of object recognition/representations and its underlying encoded dimensions. More recently, inspired by the progress made in computer vision and deep learning, I have been using computational approaches to artificial vision mimics the human brain in the way visual information is represented and encoded.

Together my work has led to publications in high-impact peer-reviewed journals among those are PLOS Computations Biology, Cerebral Cortex and several articles in the Journal of Neuroscience. These well-received articles provide evidence for my important contribution to the interdisciplinary field of cognitive, computational neuroscience.
Here is a brief description of these contributions:

During my PhD, I documented the existence of a hand-tool (category) selective area in the human visual cortex. These findings (*articles 9 and 10*) provided evidence for a new category-selective domain in the ventral visual cortex and have consistently earned me invitations to present at leading international conferences in the field of cognitive neuroscience, including the Vision Science Society, Human Brain Mapping, and the European Conference of Visual Perception, where I have also received esteemed awards, including the CAOs in 2010 and VSS in 2011.

Results from my PhD opened questions about the nature of factors driving visual cortex organization, which I investigated during my first postdoc (CIMeC, IT). During this period, I demonstrated that the visual cortex architecture partly reflects non-visual dimensions such as action related link that can explain representational similarity between body parts and action-related objects. As such, providing compelling evidence that behaviourally relevant dimensions shape the functional architecture of the ventral visual pathway. This work resulted in several publications, two of which were published in the Journal of Neuroscience (*articles 7 and 8*).

Subsequently, during my second postdoc (KU Leuven, Belgium), I demonstrated how object shape and object category interact throughout the visual cortex and how these representations are influenced by task. This work, published in the Journal of Neuroscience and Cerebral Cortex (*articles 4 and 6*), received large attention in the cognitive neuroscience audience and has also been recognised with several prices including a research grant and a prestigious FWO fellowship at KU Leuven.

These grant opportunities allowed me to extend my research interests towards computational modelling. With a series of studies combining cognitive and computational approaches, I addressed the processing parallelisms between the brain and deep neural networks showing similarities and differences in the way machines and brains represent objects. This work revealed that: 1) DNNs, even without being trained for, largely account for human-like shape perception (work published in PLOS Computational Biology – *article 5*), but their internal representations diverge from representations stored in the visual cortex (Journal of Neuroscience 2019 and PLOS Computational Biology; *articles 1 and 3*). Together these findings, suggest that, despite the great advanced made recent years, the artificial system cannot (yet) be considered accurate models of human vision.

To sum up, the trajectory of my research pursuits, from my earlier focus on cognitive neuroscience during my PhD to my recent postdoctoral work at KU Leuven, emphasizing computational neuroscience, underscores the interdisciplinary nature of my research agenda. These diverse research lines have now converged into the development of the current proposed research framework. This original framework was been published in Annual Review of Psychology (*article 2*) this year and in less that 12 months has already received large attention from the field as shown by the FWCI grade 5.53 (94th percentile).


**Fellowships and awards:**
• Research Grants and Fellowships:
      2022 UNTIN Starting Grant, Trento University, IT (Euros 10000)
      2017–2019 FWO Research Grant, Biological Psychology, KU Leuven, Belgium (Euros 40000)
      2016–2019 FWO Research fellowship, Biological Psychology, KU Leuven, Belgium
      2008–2011 PhD Scholarship, Department of Psychology, Northumbria University, UK
      2007 Student Scholarship (Bangor University, UK), Dep. of Psych, Bologna University, IT

• Student and Postdoc Research Awards
      2012 CAOs Abstract Award, Italy

2011 Elsevier/Vision Research Travel Award Winners, VSS, US
2011 Brain Travel Grant, Brain, UK
2010 Travel Award Winners at CAOs, Italy
2010 Brain Travel Grant, Brain, UK
2009 Brain Travel Grant, Brain, UK
2008 Grindley Grant, EPS, UK

## Oral Presentations at established conferences and invited talks:
Consistently highlighted by my track record, I have been invited to present my research at prestigious international conferences and at various universities.

2024 Workshop Oral Presentation The Adaptive Mind – Germany
2024 Conference Oral Presentation TEAP – Germany
2023 Conference Oral Presentation VSS – Florida, US
2022 Conference Oral Presentation ECVP – The Netherland
2022 Invited talk; Carnegie Mellon – (online) Canada
2021 Invited talk; Austral University – (online) Argentina
2021 Invited talk; Workshop – La Sapienza, IT
2021 Invited talk; UC Louvain – (online) Belgium
2021 Conference Oral Present VSS – (online) US
2020 Invited talk; Regensburg University – Germany
2020 Conference Plenary talk EWCN – IT
2018 Conference Oral Presentation VSS – US
2017 Conference Oral Presentation ECVP – Germany
2016 Conference Oral Presentation SfN – US
2015 Conference Oral Presentation BAPS – Belgium
2015 Conference Oral Presentation VSS – US
2015 Conference Oral Presentation OHBM – Germany
2013 Conference Oral Presentation VSS – US
2011 Conference Oral Presentation ECVP – France
2011 Conference Oral Presentation VSS – US
2010 Workshop Oral Presentation CAOs – IT
2010 Conference Oral Presentation VSS – US

## Periods Abroad
2014–19 KU Leuven, Belgium (research fellow)
2013–14 Beijing Normal University, China (collaboration with Prof Bi)
2008–11 Northumbria University, UK (PhD fellowship)
2007–07 Internship MSc (Bangor University, UK)

## Organization of scientific meetings
2019–now Member of the Scientific and Organizing Committee of CAOs - Workshop on Concepts, Actions, and Objects, CIMeC, Italy
2016 Member of the Organizing Committee of Neurocog, KU Leuven, Belgium

## Teaching Activities
2022–present  Computational Modelling of Perception, CIMeC, Trento University, IT
2022          Master di II livello Intelligenza Artificiale, Mente, Impresa, UNI Brescia, IT (1 module)
2020–present  Advanced Hands-on fMRI Analysis, CIMeC, Trento University, IT
2019–present  Scientific Communication, CIMeC, Trento University, IT
2019          Cognitive Neuroscience, Dipartimento di Psicologia e Scienze Cognitive, UNITN
2018          Human Brain Neuroimaging, Laboratory of Biological Psychology, KU Leuven, Belgium

## Supervision of Graduate and Postdoctoral fellows
2019–present   1 Phd Student, 7 Master Students, 3 Internship Students, CIMeC, Trento University, Italy

2017–18       1 Master Student
               Laboratory of Biological Psychology, KU Leuven, Belgium