

The brain as image processor and generator

Citation for published version (APA):

van Hoof, R. (2022). *The brain as image processor and generator: towards function-restoring brain-computer-interfaces*. [Doctoral Thesis, Maastricht University]. Ridderprint.
<https://doi.org/10.26481/dis.20220603rh>

Document status and date:

Published: 01/01/2022

DOI:

[10.26481/dis.20220603rh](https://doi.org/10.26481/dis.20220603rh)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Propositions of the PhD-thesis

The brain as image processor and generator

towards function-restoring brain-computer-interfaces

Rick van Hoof

1. Human visual perception needs to be studied *in-vivo* before we can understand human vision.
2. Ultra-high field fMRI is an invaluable neuroimaging tool for analyzing human cognitive functions *in-vivo* at the meso- and macroscopic level.
3. Functional parcellation of cortical brain regions can assist in understanding more complex brain dynamics.
4. Neural responses to specific categories of visual stimuli can be reliably mapped to a flattened model of the cerebral cortex.
5. Retinotopic organization of the visual cortex can partly be derived from anatomical structures, and can therefore also be estimated in blind individuals.
6. Virtual simulations of a visual cortical prosthesis using estimated retinotopic maps can improve visual field coverage of a cortical implant.
7. Studying the process of generating imagined percepts can aid the understanding of visual processing, and vice versa.
8. Visual perception and mental imagery share common circuitry.
9. To understand the mind, we should attempt to grasp the underlying mechanisms.
10. Scientists have the responsibility to evaluate both the risks and potential gains involved with restorative brain-computer-interfaces.
11. The academic publishing system is built on capitalism and is in need of reform.