

HELMHOLTZ IMAGING

Publication Policy

approved by the HELMHOLTZ IMAGING steering board in November 2021.

- draft version 2 -

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Rationale and introduction

The HELMHOLTZ IMAGING aims to leverage the potential of the Helmholtz Association in the field of imaging and to enable synergies across imaging modalities and imaging applications. The expertise of the Helmholtz Association in this field includes research on novel imaging modalities, experimental work using large-scale research facilities, expertise in mathematics and computer science related to imaging techniques, as well as research in image analysis within specific fields of application. One of the main components of the platform is the HELMHOLTZ IMAGING Core Team and its service portfolio. It provides scientific support in the field of imaging sciences and operates a technological platform that supports imaging related research within the Helmholtz Association. Both the HELMHOLTZ IMAGING Science Units and the HELMHOLTZ IMAGING Service Units are responsible for this support as part of the HELMHOLTZ IMAGING Core Team. The members of the HELMHOLTZ IMAGING Service and HELMHOLTZ IMAGING Science Units participate in scientific collaborations, which can be initiated via the HELMHOLTZ IMAGING Helpdesk as well as via the HELMHOLTZ IMAGING Project Support among others. Any resulting scientific output must appropriately reflect the nature of this collaboration and the respective contributions through authorship and acknowledgment (here, two types of addressees are distinguished: HELMHOLTZ IMAGING members and HELMHOLTZ IMAGING as an institution).

This policy ensures that any effort by HELMHOLTZ IMAGING and its core team members across the whole spectrum of imaging applications from acquisition, reconstruction, registration and visualization all the way to data annotation, automated image analysis and benchmarking of algorithms is appropriately acknowledged. It also ensures proper recognition of intuitions and ideas that arise when adapting imaging know-how/techniques as part of collaborative projects that may require domain background on the one hand and imaging experience/requirements on the other. The creative work done by HELMHOLTZ IMAGING Core Team members may consist of, but is not limited to, developing, conceptualizing and programming project-relevant methods, code or research software, including routines for handling raw data, preparing datasets, workflows and facilitating annotation efforts, creating visualizations and organizing competitions.

To ensure a fair publication policy for HELMHOLTZ IMAGING Core Team members, a clear distinction is made between contributions to results of collaborations with scientists from the Helmholtz Association and researchers from the global imaging community that lead to co-authorship, that lead to a mention in the acknowledgement, or that do not require a mention at all. The use of a HELMHOLTZ IMAGING Solution always requires a citation of the corresponding publication or DOI and may require a mention of HELMHOLTZ IMAGING in the acknowledgement (cf. Guideline for affiliations and acknowledgments in publications & presentations¹),

¹ <https://syncandshare.desy.de/index.php/s/abA6Hn5AWQzCrRx>

depending on how much effort HELMHOLTZ IMAGING has put into developing and providing this specific HELMHOLTZ IMAGING Solution. If this is the case, it will be pointed out via citation metadata when downloading the HELMHOLTZ IMAGING Solution. This policy is designed to meet the specific forms of collaborative work and strong engagement of HELMHOLTZ IMAGING Core Team members in the development of solutions, resources, and tools for addressing imaging challenges.

Before submitting a draft for publication (whether peer-reviewed or pre-print), it must be forwarded to the respective HELMHOLTZ IMAGING Core Team member regardless of the type of acknowledgment. In case of disagreement, the HELMHOLTZ IMAGING Steering Board may be consulted for clarification.

This document sets out the generally binding publication policy for scientists collaborating with HELMHOLTZ IMAGING Core Team members. To ensure good scientific practice, please refer to the Guidelines for Ensuring Good Scientific Practice² published by the German Research Foundation (DFG). These guidelines define the overarching conditions and responsibilities of authorship:

“An author is an individual who has made a genuine, identifiable contribution to the content of a research publication of text, data or software. All authors agree on the final version of the work to be published. Unless explicitly stated otherwise, they share responsibility for the publication. ...”

The examples provided below are intended to provide guidance on the application of this general principle in the context of collaborations between HELMHOLTZ IMAGING Core Team members and other researchers, keeping in mind that the assessment of whether a contribution is substantial is ultimately a judgment call and the lists can never be exhaustive.

This policy and additional information can also be found on the HELMHOLTZ IMAGING website at www.helmholtz-imaging.de³.

(1) Authorship contributions

For any publication derived from a collaboration in which a HELMHOLTZ IMAGING Core Team member participated, the following creative and analytical contributions must result in the offer of co-authorship to the contributing HELMHOLTZ IMAGING Core Team member. If the contributing HELMHOLTZ IMAGING Core Team member has made a contribution in accordance with any item on this list, but declines co-authorship either because he or she fundamentally disagrees with the overall message or because he or she does not consider his or her own contribution to be sufficiently substantive, a mention in the Acknowledgments is the appropriate form of recognition of such efforts [the following description is based on the [Contributor](#)

² https://www.dfg.de/download/pdf/foerderung/rechtliche_rahmenbedingungen/gute_wissenschaftliche_praxis/kodex_gwp_en.pdf

³ <https://syncandshare.desy.de/index.php/s/T6KZwFMSFyaAXpL>

[Roles Taxonomy \(CRediT\)](#)⁴, it is certainly not (yet) complete and can definitely be supplemented].

- **Conceptualization:** formulation of a conceptual design for an imaging or data model for the research project at hand, this may include:
 - the formulation of tasks suitable for the application of imaging techniques to given data
 - envisioning solution strategies along with necessary tools for the posed problem
 - helping to find a good solution strategy by finding severe fundamental deficiencies rendering an existing approach non-functional, making envisaged application impossible or severely impaired
- **Data curation:**
 - creating new preprocessing techniques for, e.g., calibration, denoising, inpainting, contrast enhancement, deconvolution
 - management activities to annotate (produce metadata), filter and transform data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use
 - creating services for wide and flexible community access to the existing imaging models, software, or data sets that were not accessible before
 - creating, extending, or refining data sets that enable training/testing of imaging models/software that were not possible before either due to lack of data for training for the particular problem setting or due to fundamental issues with data quality or content
- **Formal analysis:**
 - application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data
 - using existing techniques/models/modalities/... in such a novel way that it provides solutions or insights to scientific problems that were not previously possible
 - reproduction of published results (e.g., with unseen domain specific data) to support or motivate a publication
- **Investigation:** conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.
- **Methodology:** development or design of new methodology, e.g.,
 - develop new methodologies for previously unsolved problems

⁴ <https://casrai.org/credit/>

- adapt and optimize existing methodologies for a new imaging application
 - create solutions that substantially enhance (accelerate, scale, generalize, lift to higher dimensions, ...) existing imaging methods and
 - enable experiments that were not possible before due to intractability (computing time, storage capacity, etc.)
- **Model:** (new) creation of a scientific model and domain adaptation, transfer of a scientific model.
- **Software engineering:** if substantial work is performed in specific support of a HELMHOLTZ IMAGING project
 - programming, software development and designing computer programs,
 - implementation of the computer code and supporting algorithms
 - (automated) testing of existing code components
 - continuous learning of models with updated data
 - designing or extending software code or platforms necessary to solve posed Imaging problems
 - implementation of complex workflows to test, validate, improve already existing and working models/code
- **Supervision:** Oversight and leadership responsibility for the Imaging or image analysis part of the research activity, planning and execution
- **Validation:** verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs
- **Visualization:** substantial contribution to figure or animation design and implementation for visualizing the data and/or interpretation for a scientific audience
- **Writing:** preparation and/or creation of a publication, specifically writing of substantial sections of the initial draft, e.g., the methodology description or statistical analysis part.

(2) Acknowledgement contributions

Not sufficient in themselves for authorship, but requiring mention in the acknowledgements, are the following contributions:

- Non-trivial input on improvements or implementation of previously conceived models and designs (algorithms, experiments, methods...)
- Provision of study materials, data, computing resources, pipelines, or other analysis tools

- Provision of or enabling access to imaging devices
- General advice on possible improvements, without hands-on work
- Assessment of data quality, methodological feasibility and readiness, without subsequent work on the project
- Support in visualization, especially with respect to the preparation of figures in a standardized format without novel concepts and to a limited extent
- Implementation of simple workflows to test, validate, improve already existing and working models/code
- Adaptation or minor modification of existing solutions/modalities/pipelines for a task (without significant change to the model itself).
- Critical review, comment or revision of the publication.
- The use of a HELMHOLTZ IMAGING Solution always requires a citation of the corresponding publication and may require a mention of HELMHOLTZ IMAGING in the acknowledgement⁵, depending on how much effort HELMHOLTZ IMAGING has put into developing and providing this specific HELMHOLTZ IMAGING Solution.

(3) Contributions not worth mentioning

The following contributions are not sufficient on their own to be mentioned in a publication. For the most part, they are not to be understood as part of a substantial collaboration with the HELMHOLTZ IMAGING Core Team:

- routine maintenance work,
- quick consultations limited to 1 or 2 interactions and/or meetings,
- establish a contact to experts/infrastructure
- providing an existing and tested solution or model for the task at hand,
- training staff on standard imaging methods,
- providing simple technical support, such as recommending tools or pointing towards pre-existing code that can help implement a working solution,
- reading the manuscript without substantial contributions to its content.

Resources, info, and notes

This publication policy is based on the [Contributor Roles Taxonomy \(CRediT\)](#)⁶, which was established by the Consortia Advancing Standards in Research Administration Information (CASRAI).

⁵ cf. <https://syncandshare.desy.de/index.php/s/abA6Hn5AWQzCrRx>

⁶ <https://casrai.org/credit/>

To ensure good scientific practice, please adhere to the Code of Conduct [Guidelines for Safeguarding Good Research Practice](#)⁷ provided by the German Research Foundation (DFG - Deutsche Forschungsgemeinschaft). Furthermore, we thank Helmholtz AI for providing us with their publication guidelines, which served as a template for much of this one.

An additional [guideline for affiliations and acknowledgements in publications](#)⁸ is dedicated to a standardized affiliation and funding acknowledgement style for HELMHOLTZ IMAGING publications. The latter policy can be found on the HELMHOLTZ IMAGING website (<http://www.helmholtz-imaging.de/>).

⁷

https://www.dfg.de/download/pdf/foerderung/rechtliche_rahmenbedingungen/gute_wissenschaftliche_praxis/kodex_gwp_en.pdf

⁸ <https://syncandshare.desy.de/index.php/s/abA6Hn5AWQzCrRx>

Imprint

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Version

1
published June 14, 2021

Online edition

available at https://helmholtz-imaging.de/research/publications/index_eng.html