

Al applications in routine clinical imaging

Citation for published version (APA):

Vaidyanathan, A. (2023). AI applications in routine clinical imaging: detection, segmentation, diagnosis, and prognosis. [Doctoral Thesis, Maastricht University]. Maastricht University. https://doi.org/10.26481/dis.20230228av

Document status and date: Published: 01/01/2023

DOI: 10.26481/dis.20230228av

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 riahts.

- 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

belonging to the thesis

Al applications in routine clinical imaging: detection, segmentation, diagnosis, and prognosis

Akshayaa Vaidyanathan 28 February 2023

- 1. Quantitative analysis of medical imaging data can provide complementary information to aid physicians in the decision-making process, in a fast and reproducible way (this thesis).
- 2. Automated and/or semi-automated Radiomics and AI based methodologies can produce generalizable performance on segmentation, detection and classification tasks overall equivalent to that of an expert human charged with the same tasks (this thesis).
- 3. Quantification of known radiological semantic features of the region of interest can be a stepping stone towards the clinical xAI (this thesis).
- 4. Explainable medical imaging AI needs human-centered design (Chen, H., Gomez, C., Huang, CM. et al).
- 5. On an average, the expert users (radiologists) are more likely to prefer model-generated segmentations over manual segmentations (this thesis).
- 6. Features extracted from automatic segmentations had a better reproducibility that those extracted from manual segmentations (Parmer et al).
- 7. Phantom study could help to investigate the influence of image acquisition parameters on radiomic feature values (this thesis).
- 8. A combination of AI and an expert reader will surpass the individual performances of an AI and an expert reader (this thesis, Christian Leibig. et al).