

Propositions accompanying the thesis

Streamlined Quantitative Imaging Biomarker Development

Generalization of radiomics through automated machine
learning

by Martijn P. A. Starmans

1. Automated machine learning increases reproducibility and improves generalization of radiomics methods. (*this thesis*)
2. Researching how current radiomics methods can be complemented with new methods adds more value to science than focusing on how new methods can outperform existing ones. (*this thesis*)
3. The sensitivity of radiomics models to heterogeneity in imaging data can be overcome by training them on large, heterogeneous, multi-center datasets. (*this thesis*)
4. Radiomics studies should include routine clinical imaging data without strict acquisition protocol restrictions to ensure wide applicability. (*this thesis*)
5. Similar to radiologists, radiomics models specialized in different applications can learn from each other. (*this thesis*)
6. Often it is better to master the current best method than to design a new and improved approach. (*Wyke Huizinga*)
7. The lack of large datasets in radiomics should not be an excuse to stop developing methods that can properly handle small datasets.
8. Peer reviewing of papers should be blinded for the results, and should solely be based on the introduction and methods.
9. Centralized learning through open science adds more value to society than federated learning.
10. Instead of one, there should be two different PhD tracks with separate criteria: research and education.
11. The high perceived publication pressure by PhD students can be reduced by shifting from an individual to a team based approach, including collaborative projects between PhD students, introducing mentoring and buddy programs, and having regular interventions.