

Quantitative imaging in radiation oncology

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Propositions accompanying the PhD-thesis

Quantitative imaging in radiation oncology

Alberto Traverso

Tuesday, April 13th 2021, 16:00 hours

1. It becomes clear how advances in medical imaging will improve RT, offering better chances for cure, decreased side effects and extension of indications.

- A. Traverso

2. Robust and reliable radiomics, which can then produce decision support systems to be used in the clinic, relies on an absolute and meticulous effort in optimizing each of the computational steps in the chain.

- A. Traverso

3. This thesis has contributed to raise awareness on some of the pitfalls encountered in radiomics. It is worth to remark again that this thesis does not give any judgement on the quality and role of radiomics in radiation oncology.

- A. Traverso

4. To conclude, the future of radiomics will be brighter only if we re-think radiomics, and more in general AI and medical image analysis, as a community effort from a worldwide clinical data science community with the above- mentioned stakeholders. The future of radiomics has to pass through this paradigm shift, a necessarily radiomics renewal phase.

- A. Traverso

5. I have proposed methods that can support more transparent and robust developments of image-derived biomarkers and shown how cautions are required when using Artificial Intelligence, or more specifically Machine Learning and Deep Learning, to draw conclusions.

- A. Traverso

6. Artificial intelligence is neither good nor evil. It's a tool. It's a technology for us to use.

-O. Etzioni

7. A model is a lie that helps you see the truth.

- from The Emperor of All Maladies: A Biography of Cancer

8. Science is not only a discipline of reason but also one of romance and passion.

- Stephen Hawking

9. You discovered that Toronto is just a larger Varese, besides the cold it is not that bad.

- Adapted from Vasco Brondi: Coprifuoco

10. Questions of science, science and progress. Do not speak as loud as my heart.

- Coldplay: The scientist

11. What is the fatal charm of Italy? What do we find there that can be found nowhere else? I believe it is a certain permission to be human, which other places, other countries, lost long ago.

- E. Jong