Maastricht University

Machine learning & semantic web technologies for cancer care

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PROPOSITIONS

1. Gone are the days when the clinician relied on only the stethoscope and physical examination to diagnose health conditions, barring a few routine ailments such as a viral or bacterial infections.
2. Annotated data providing information and context to a machine, is the key ingredient for deep learning networks. Semantic web technologies provides this information, making data machine comprehensible.
3. Semantic Web is used to find self-describing interrelations of data in a form that machine can process. They help us to store, manage and retrieve information based on meaning and logical relationships. So instead of showing only matching text, it also helps us to find related text.(this thesis).
4. Ethical challenges often center on the need to protect the privacy of patients. One ethically and legally accepted way of accessing and processing personal data, such as patient data, is to ask consent of data subject involved.
5. Fractals can play a vital role in Radiomics, providing information not only about the Gross Tumor Volume (GTV) structure, but also can help in characterization of the tumor.
6. Clinical decision support algorithms have evolved over time from simple ontology (rule based) to deep neural networks (DNN).
7. The huge haystack of images acquired at scale needs to be put to meaningful use.
8. Centralized computing solutions in the cloud is evolving towards a combination of distributed computing, edge computing and central computing.
9. Electronic Medical Records are not successful as they demand laborious data entry by clinicians.
10. Treatment strategies and care pathways in cancer care is largely institution based.
11. Many of the concepts, models and algorithms developed in the thesis, are being integrated into the Philips Digital platform for monetization.
12. "*Good data stewardship is strategic to deep learning success.*"
13. Deep in the human subconscious is a pervasive need for a logical universe that makes sense. But the real universe is always one step beyond logic. – *Frank Herbert*
14. Where there is a will there is a way.