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Human-computer interaction in radiology

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Thesis statements

1. Usability engineering is vital for high-quality human-computer interaction in radiology (Chapters 2 and 3).

2. Usability cannot be assessed by looking at functionality alone (Chapter 2).

3. Analysis of user interaction log data is less effective for identifying usability issues than a field study (Chapter 4).

4. Take-off and zoom-pointing are the most appropriate touch-based interaction techniques for a radiological audience response system (Chapter 5).

5. Adaptive support for user interface customization improves radiologists' customization effectiveness (Chapter 6).

6. Designing computer-aided diagnosis (CAD) systems for appropriate trust is important and can improve the performance of the radiologist-CAD team (Chapter 7).

7. Radiologists have a more appropriate level of trust in a CAD system that provides a rationale for its decisions than in a CAD system that is a black box to them (Chapter 7).

8. Machine learning techniques can be used to convert free-text radiology reports into a structured, standardized format (Chapter 8).

9. Radiology reports should be stored in a structured, standardized format to allow for effective processing of the information they contain.

10. It is impossible to fully mitigate the risks associated with the use of a medical device. Some responsibility will always remain with the user.

11. Radiologists will never be replaced by artificial intelligence.

12. In addition to studying digital technology in itself, it is vital to study the way humans interact with it.

13. We are stuck with technology when what we really want is just stuff that works – Douglas Adams.

14. Simplicity is the ultimate sophistication – Leonardo da Vinci.

Wiard Jorritsma, 2016