AI in Radiology 2022 Report

Assessing the attitude towards, preferences for and current usage of AI-based assistance tools among German radiologists

Survey among German radiologists 2022
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Introduction

Artificial Intelligence (AI) has become more capable than ever thanks to Machine or Deep Learning techniques enabled by significant computing power advances in the last decade. Of course, health care was not spared by these developments and AI is continuously considered to positively influence the quality, efficiency and patient experience of care. Especially the so-called “doctors with patterns”, like radiologists or pathologists, that generate and rely on structured datasets are at the center of this development. AI-based studies in health care experienced exponential growth since 2012 with radiology being the second most studied specialty. Most of these studies, however, exclusively focus on the sensitivity and specificity of AI-based assistance tools. This can be considered a reasonable first step but does not necessarily incorporate the opinions and preferences of the ultimate users. In order to drive adoption of value-adding AI-based tools, the research community and industry needs to better understand the opinions of radiologists as the ultimate users.

This compact report attempts to capture the current attitude towards, preferences for and adoption of AI among German radiologists. Do they in general trust AI in radiology and are they expecting to be made redundant by it? What features are most important when considering adopting an AI-based assistance tool? Which tools are currently in use and who is providing them? These and many more questions were answered by 114 German radiologists. This survey was part of a broader experiment published in the BMC Health Services Research Journal titled “Physicians’ preferences and willingness to pay for artificial intelligence-based assistance tools: a discrete choice experiment among German radiologists”.

We hope that we can provide valuable insights for practitioners, research and industry working towards the adoption of value-adding AI in radiology.
I - Attitudes towards digitization

Q1: I stay informed about technical novelties regarding my job.

- Strongly disagree: 0%
- Disagree: 4%
- Neither: 6%
- Agree: 57%
- Strongly agree: 32%

Q2: My work environment and related processes are strongly digitalized.

- Strongly disagree: 0%
- Disagree: 2%
- Neither: 4%
- Agree: 51%
- Strongly agree: 44%

Q3: The number and variety of digital applications in radiology are increasingly difficult to grasp.

- Strongly disagree: 1%
- Disagree: 10%
- Neither: 22%
- Agree: 42%
- Strongly agree: 25%

Q4: I follow the public discussion regarding AI.

- Strongly disagree: 0%
- Disagree: 3%
- Neither: 7%
- Agree: 57%
- Strongly agree: 33%
II - Attitudes towards AI

Q5: AI will replace radiologists in the future.

Q6: AI will complement radiologists in the future.

Q7: AI can improve the quality in radiology.

Q8: AI can improve the efficiency in radiology.
II – Attitudes towards AI

Q9: AI can **save costs** in radiology.

- Strongly disagree: 6%
- Disagree: 18%
- Neither: 25%
- Agree: 26%
- Strongly agree: 25%

Q10: I **trust** AI in radiology.

- Strongly disagree: 1%
- Disagree: 9%
- Neither: 49%
- Agree: 29%
- Strongly agree: 12%

Q11: I see the **need for further education** on AI in radiology.

- Strongly disagree: 0%
- Disagree: 1%
- Neither: 5%
- Agree: 56%
- Strongly agree: 38%

Q12: In 10 years, patients will **prefer** radiologists that rely on **AI-based support**.

- Strongly disagree: 0%
- Disagree: 10%
- Neither: 20%
- Agree: 49%
- Strongly agree: 21%
III - AI-based assistance tools

Q13: We increasingly receive offers for AI-based solutions from a variety of providers.

Q14: We increasingly ask for offers for AI-based solutions.

Q15: I feel well informed regarding the currently available AI-based assistance solutions.

Q16: The pricing for AI-based solutions in radiology is appropriate.
IV - AI preferences & develop.

Q17: What are the **most important aspects when considering adopting** an AI-based assistance tool?

1. Saves **time** in diagnostics
2. Saves **costs**
3. Improves **image quality**
4. Diagnoses better than humans
5. Shortens scanning process
6. Is approved as a medical device
7. Usage is reimbursed via EBM/GOÄ

Q18: **We ourselves develop AI-based solutions to speed up processes or improve diagnostics.**

- Strongly disagree: 58%
- Disagree: 24%
- Neither: 4%
- Agree: 9%
- Strongly agree: 5%

Q19: **We ourselves develop AI-based solutions as part of our research agenda.**

- Strongly disagree: 65%
- Disagree: 18%
- Neither: 6%
- Agree: 4%
- Strongly agree: 6%
Q20: Do you currently use AI-based solutions?

- Yes: 46%
- No: 50%
- Unsure: 4%

Q21: What kind of AI-based assistance tools do you currently use?

- Supporting/speeding up diagnosis: 42%
- Creation of reports: 21%
- Image quality improvements: 15%
- Scan process shortening: 7%
- Replacing/reducing contrast agent usage: 5%
- Practice/station management: 5%
- Prognosis of course of disease: 4%
- Other: 2%
VI - AI providers & future plans

**Q22:** Who provided your currently used AI-based assistance tool(s)? (n=82)

- Siemens Healthineers: 29%
- AI-software startup: 20%
- RIS/PACS software provider: 15%
- Philips: 10%
- Other equipment provider: 10%
- Own development: 7%
- Other: 6%
- GE: 4%

**Q23:** Do you **plan to invest** in (other) AI-based systems in the **next 2 years**?

- Yes: 35%
- No: 18%
- Unsure: 46%
Appendix: Survey sample

Links to the survey were sent to members of the two major professional associations of German radiologists, namely Deutsche Röntgengesellschaft (DRG) and Berufsverband Deutscher Radiologen e.V. (BDR). 114 questionnaires were completed between September 2020 and March 2021.

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<td>Min.</td>
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<tr>
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<tr>
<td>Musculoskeletal diagnostics</td>
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<td>Neuroradiology</td>
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<tr>
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<td>Pediatric radiology</td>
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<td>13+</td>
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<tr>
<td>Not fully trained</td>
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