Author’s response to reviews

Title: Testing of the Assisting Software for Radiologists Analysing Head CT Images: Lessons Learned

Authors:

Petr Martynov (petr.martynov@oulu.fi; pnmartynov@gmail.com)
Nikolai Mitropolskii (nicolaymitropolsky@gmail.com)
Katri Kukkola (Katri.Kukkola@oulu.fi)
Monika Gretsch (Monika.Gretsch@ppshp.fi)
Vesa-Matti Koivisto (vesa-matti.koivisto@lshp.fi)
Ilkka Lindgren (ilkka.lindgren@ppshp.fi)
Jani Saunavaara (jani.saunavaara@irad.fi)
Jarmo Reponen (jarmo.reponen@oulu.fi)
Anssi Mäkynen (anssi.makynen@ee.oulu.fi)

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Dear reviewers,

Please, find below answers and comments for your complaints:

1.1. Recollecting and reanalyzing your data fits a retrospective observational study, thus the necessity of ethical approval.

The study was targeted not to observe actual patients or identify specific disease groups in retrospective, but assess test plan for evaluating usability and usefulness of the software developed for assisting in the radiologist's workflow. Nevertheless, usage of anonymized radiological studies for the software development and testing were allowed by the Regional Ethics Committee of the Northern Ostrobothnia Hospital District. We have added information about ethical approval to the manuscript and attached scanned version of the approval.
1.2. It is not clear if seeMIK is an open source software developed by your hospital/center or a company-developed tools; if so, please declare in your manuscript and send your ethical approval for a profit study.

SeeMIK is the software developed during public study performed in the University of Oulu. According to the policy of the University of Oulu, intellectual property is owned by the university, and currently there is no final decision if it can be licensed commercially or open sourced.

1.3. Your "image queries" software is, I guess, based on some sort of CT-scanner-related parameters; how would you think to set it up for other brand/type?

In the study performed we have used images created by several CT scanners and with different image reconstruction parameters. To set up the software for searching various CT images we just need to use significant amount of different images in initial sample indexing for creating sensitive vocabulary of "visual words". It is also possible to re-create the vocabulary on further steps of the software lifecycle, when for example some new equipment will be available in a hospital.

2.1. Your system has to be analyzed with existing system and may compare those system statistical report.

That is right, thank you. In current study we have concentrated on how such software should be tested with end users. Comparison to other systems or current workflow is our next step and a topic for another study with a verified test plan.

2.2. The manuscript has to describe the conventional approach of the proposed system.

The main idea of the SeeMIK software is to search similar cases from hospital database by image and text queries. Any content-based image retrieval system (CBIR) consists of two components: features or descriptors, which are vectors describing visual content of an image as a mathematical representation, and a technique for comparing features of different images aimed to assess similarity. We explained CBIR approach a little bit better and added it to the manuscript.

2.3. How the data base of text and images are collected (any specified database)?

Information about data collected and ethical approval was added to the manuscript.

2.4. What text feature are considered while it analysed?
We hope that we understood the question correctly. Information about text stemming and processing before indexing was added to the Materials and methods section of the manuscript.

2.5. Need brief functional diagram of the proposed system to perceive the system quickly.

Functional diagram of the software modules and their description was added to the manuscript.

Best regards, authors.