SOFTWARE THAT GENERATES RADIOLOGY REPORTS USING DEEP LEARNING

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T-018976 Software that Generates Radiology Reports using Deep Learning

Technology Description

Researchers at Washington University in St. Louis have developed a computational software method designed to assist radiologists with generating and correcting patient reports more effectively. Radiology reports may contain logical or dictation errors (e.g., left vs right, carotid vs parotid, angiolipoma vs angiomyolipoma) or important interpretive shortcomings (e.g., describing a brain tumor with central necrosis and interpreting this tumor generically as a "brain mass" rather than the more specific and useful "glioblastoma"). This invention utilizes language modeling that is powered by deep learning to proofread radiology reports for errors, suggest corrections, and generate a summary section (the so-called "Impression") that accurately synthesizes reported findings into accurate, specific, and prioritized diagnoses and treatment recommendations.

This invention might save time for radiologists, reduce turnaround time for reports, improve the quality of radiology reports, decrease the frequency of errors, and reduce medicolegal risk from low quality or error-containing reports.

Stage of Research

Fully trained model with 4 million radiology reports using Transformer neural network architecture, performance validated in a real world clinical environment against subspecialized radiologists.

Publications

- Morgan P. McBee, Omer A. Awan, Andrew T. Colucci, Akash P. Kansagra, Deep Learning in Radiology. Academic Radiology, Volume 25, Issue 11, 2018, Pages 1472-1480, ISSN 1076-6332.
- Akash P. Kansagra, John-Paul J. … Sayed Ali. Big Data and the Future of Radiology Informatics, Academic Radiology, Volume 23, Issue 1, 2016, Pages 30-42,

Applications

- Generating radiology reports
- Proofreading radiology reports
- Correcting radiology reports

Key Advantages

- **Automates radiologists' workflow through report generation**

- **Proofreads and corrects errors in radiology reports**
- **Automatically generates one section of a report based on information from existing sections**
- **Saves time and improves workload**
- **Improves quality of radiology reports**
- **Reduces medicolegal risk from low quality or error-containing reports**

Patents

Patent application filed

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