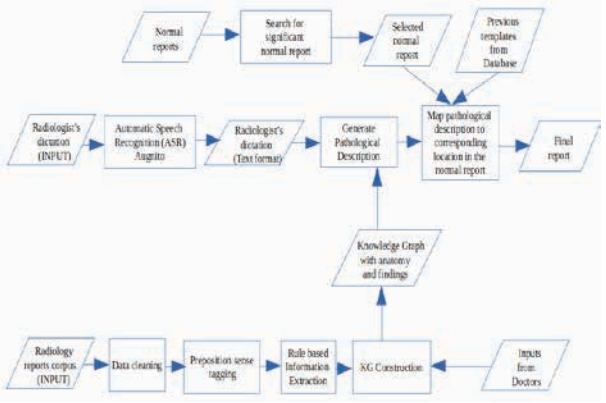
Shushrut: Automatic Radiology Report Generation



Problem Statement: Generating reports from radiology (XRAY, MRI, CT, UltraSound) plates automatically with high accuracy and speed enables the radiologist to concentrate only on diagnostics. Developing such a system for increasing efficiency and diagnosis-accuracy of clinical workflow in Indian radiology can be possible using automatic speech recognition (ASR) and natural language processing (NLP). Improving productivity of radiologists is equivalent to reaching the US-like ratio of one radiologist per 10,000 people, up from the prevalent Indian condition of one radiologist per 100,000. In such a system, ideally, the input to the system would be (i) input text (spoken form) and (ii) generic radiology report with all normal findings. This system should then give an output that would be a radiology report with patient-specific findings.

Uniqueness of the Solution: Shushrut is developed as a solution using ASR and NLP. Structured information from the free text is found, and a hierarchical knowledge graph is constructed. This knowledge graph is used to convert the radiologist's dictation to pathological description, leading to a huge productivity improvement for radiologists.
The speech recognition part has been commercialised under the name Augnito (https://augnito.ai/). Shushrut is the next block in the pipeline for converting radiologists' spoken impressions into a full-fledged diagnostic report.

Current Status of Technology: Validated/ Developed Technology is currently being used by doctors on trial.

Societal Impact: The number of radiology reports that the radiologist can examine is expected to rise ten times due to a reduction in the human-in-the-loop factors and routine and drudgery-full tasks relegated to the machine, thereby increasing the efficiency of radiologists and reducing time.

Patent(s): Nil

Relevant Industries: Healthcare, Diagnostics, Digital Health Management, Diagnostic Centres.

Faculty: Prof. Pushpak Bhattacharyya, Computer Science & Engineering.