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Visual Interpretation with Three-Dimensional Annotations (VITA): Open Source Automated 3D Visual Summary Application Using AIM (Annotation Imaging Markup) Enabled PACS Based On Radiologist Annotations

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BACKGROUND

Radiologists use image annotations in PACS as a part of their routine diagnostic interpretation (measurements, arrows, etc). These annotations contain informative visual information that can significantly augment radiologists text reports. Ordering providers, however, frequently can only access the text-based report due to the due to the proprietary implementations of annotations by most PACS vendors. The AIM (Annotation Imaging Markup) project attempts to create a standard by which these annotations are created so that annotation and image content can be easily and automatically searched and utilized. Project VITA was developed to leverage AIM annotations in order to help visually communicate important clinical findings.

EVALUATION

We have developed an open source visualization tool, called VITA, which automatically generates a visual summary from the image annotations which works on any DICOM viewer which supports AIM (eg, Clear Canvas). The summary is computed as a rotating 3D volume that incorporates image annotations made by the radiologist. These annotations, ie, geometric primitives (arrows, lines, volumes) as well as text annotation are automatically highlighted in a clear manner as the volume spins to provide a visual summary of the important clinical content. The rendered volume is produced as a series of DICOM images that can automatically be sent back to the PACS archive as an additional series to the original study allowing for easy access to providers.

DISCUSSION

VITA is intended to augment text-based reports in the form of a visual summary automatically generated based on radiologist annotations, in hopes of better conveying important clinical information visually to providers. VITA seamlessly integrates into existing workflows by allowing the visual summary to be viewed as an additional DICOM series. In addition, a video summary (eg, MPEG4) is also generated for situations in which DICOM viewers are not readily available to clinicians.

CONCLUSION

VITA enables radiologists to communicate important image observations to other clinicians in the form of an auto-generated visual summary of imaging studies based on their own expert annotations using AIM-compatible DICOM viewers.

FIGURE (OPTIONAL)

