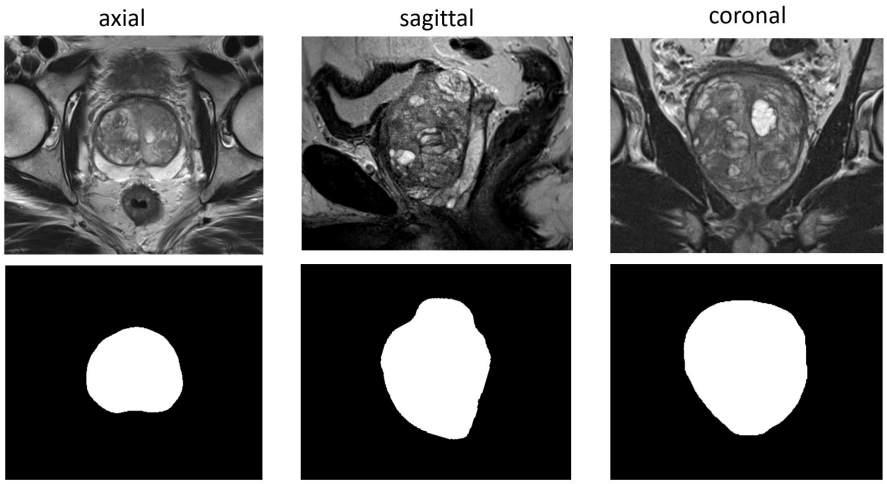
High Resolution Prostate Segmentations for the ProstateX-Challenge (PROSTATEx-Seg-HiRes)

Summary



We created 66 high resolution segmentations for randomly chosen T2-weighted volumes of the SPIE-AAPM-NCI PROSTATEx Challenges (PROSTATEx). The high resolution segmentations were obtained by considering the three scan directions: for each scan direction (axial, sagittal, coronal), the gland was manually delineated by a medical student, followed by a review and corrections of an expert urologist. The se three anisotropic segmentations were fused to one isotropic segmentation by means of shape-based interpolation in the following manner: (1) The signed distance transformation of the three segmentations is computed. (2) The anisotropic distance volumes are transformed into an isotropic high-resolution representation with linear interpolation. (3) By averaging the distances, smoothing and thresholding them at zero, we obtained the fused segmentation. The resulting segmentations were manually verified and corrected further by the expert urologist if necessary. Serving as ground truth for training CNNs, these segmentations have the potential to improve the segmentation accuracy of automated algorithms. By considering not only the axial scans but also sagittal and coronal scan directions, we aimed to have higher fidelity of the segmentations especially at the apex and base regions of the prostate.

The segmentations to standard DICOM representation were created with *dcmqi* .

Acknowledgements

- This work has been funded by the EU and the federal state of Saxony-Anhalt, Germany under grant number ZS/2016/08/80388.

Data Access

Data Access

Data Type	Download all or Query/Filter	License
Segmentations (DICOM, 0.119 GB)	*Download Search* (Requires NBIA Data Retriever.)	CC BY 3.0

Click the Versions tab for more info about data releases.

Please contact help@cancerimagingarchive.net with any questions regarding usage.

Collections Used in this Third Party Analysis

Below is a list of the Collections used in these analyses:

Source Data Type	Download all or Query/Filter	License
Corresponding Original MR Images from PROSTATEx (DICOM, 371.21 MB)	*Download* (Requires NBIA Data Retriever.)	CC BY 3.0

- PROSTATEx

Detailed Description

Detailed Description

Image Statistics	

Modalities	SEG
Number of Patients	66
Number of Studies	66
Number of Series	66
Number of Images	66
Image Size (GB)	0.119

Citations & Data Usage Policy

Citations & Data Usage Policy

Users must abide by the TCIA Data Usage Policy and Restrictions. Attribution should include references to the following citations:

Data Citation

Schindele, D., Meyer, A., Von Reibnitz, D. F., Kiesswetter, V., Schostak, M., Rak, M., & Hansen, C. (2020). **High Resolution Prostate Segmentations for the ProstateX-Challenge [Data set]**. The Cancer Imaging Archive. https://doi.org/10.7937/TCIA.2019.DEG7ZG1U

Publication Citation

Meyer, A., Chlebus, G., Rak, M., Schindele, D., Schostak, M., van Ginneken, B., Schenk, A., Meine, H., Hahn, H. K., Schreiber, A., & Hansen, C. (2020). Anisotropic 3D Multi-Stream CNN for Accurate Prostate Segmentation from Multi-Planar MRI. Computer Methods and Programs in Biomedicine, 105821. https://doi.org/10.1016/j.cmpb.2020.105821

TCIA Citation

Clark K, Vendt B, Smith K, Freymann J, Kirby J, Koppel P, Moore S, Phillips S, Maffitt D, Pringle M, Tarbox L, Prior F. T**he Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository**, Journal of Digital Imaging, Volume 26, Number 6, December, 2013, pp 1045-1057. DOI: 10.1007/s10278-013-9622-7

Other Publications Using This Data

TCIA maintains a list of publications that leverage TCIA data. If you have a manuscript you'd like to add please contact the TCIA Helpdesk.

Versions

Version 1 (Current): 2020/09/18

Data Type	Download all or Query/Filter
Segmentations (DICOM, 0.119 GB)	Download Search
Corresponding Original MR Images from PROSTATEx (DICOM, 371.21 MB)	Download