ABSTRACT

The nnU-Net of Isensee et al. currently represents the state of the art in kidney and kidney tumor segmentation.

Their method achieved human-level performance on kidney segmentation, but there remains room for improvement on kidney tumors.

RESULTS

The nnU-Net of Isensee et al. currently represents the state of the art in kidney and kidney tumor segmentation.

OBJECTIVES

We set out to provide clarity on the optimal approach to training a learned system for semantic segmentation of kidneys and kidney tumors by hosting an international competition in which any team around the world could have their methods objectively assessed and ranked.

METHODS

More than 100 teams from five continents participated in the competition, making it the most popular semantic segmentation challenge ever to be run in conjunction with the International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI).

PARTICIPATION

More than 100 teams from five continents participated in the competition, making it the most popular semantic segmentation challenge ever to be run in conjunction with the International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI).

CONCLUSION

The KiTS19 challenge demonstrated that modern methods for automatic kidney segmentation are as reliable as manual methods, and that human-level kidney tumor segmentation is within reach. Surprisingly, the event also demonstrated that the simple, "vanilla U-Net", with the right mix of hyperparameter tuning and data augmentation, is currently the best method for 3D medical image segmentation. The KiTS19 data remains available and the leaderboard remains open, allowing for this event to continue to serve as a challenging benchmark in 3D segmentation for years to come.

Contact Information

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