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Kidney and Kidney Tumor Segmentation

MICCAI 2021 Challenge, KiTS 2021
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Proceedings

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Preface

This volume contains the proceedings of the second international challenge on Kidney and Kidney Tumor Segmentation (KiTS 2021), held virtually in conjunction with the International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI) in 2021. By “proceedings”, we mean to say that this volume contains the papers written by participants in the challenge to describe their approach to developing a semantic segmentation approach for kidneys, kidney tumors, and kidney cysts, using the official training dataset released for this purpose, and any other publicly available datasets of their choice.

Machine learning competitions like KiTS are poised to play an ever larger role in machine learning research, especially in an application domain like medical imaging where data is so difficult to collect and even more so to release. The standardized benchmarks that competitions provide have a singular ability to elucidate which of the many proposed methods truly are superior. Given that, we believe that those of us who organize machine learning competitions have a responsibility to push the boundaries of these events to bolster their impact and rigor, while also maintaining a high level of participation.

From what we have seen, it is not often that machine learning competitions have peer reviewed proceedings. In fact, the first iteration of KiTS in 2019 did not have them, but one of the pieces of feedback that we heard after 2019 was that the impact would be greater if the participants described their approaches with more clarity and in greater detail. We thought that offering a peer-reviewed publication for contributions of sufficient quality might incentivize participants to improve this and, given the contents of this volume, we know now that we were correct. We thank the participants for their diligent efforts in putting together exceptional manuscripts to describe their approaches.

Of course, no scientific program would be successful without the huge effort put forth by the Program Committee. The Program Committee for KiTS 2021 deserves even more praise, however, because these individuals also served to provide labels for the KiTS 2021 dataset. It surely goes without saying that KiTS 2021 would not have moved forward without their tireless efforts.

November 2021

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