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University of Westminster, UK



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ColoSeg

A Medical Image Segmentation System with Deep Learning

A dissertation by

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w1742104 / 2018373

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May 2023

Submitted in partial fulfilment of the requirements for the
BEng (Hons) Software Engineering degree at the University of Westminster.

ABSTRACT

Medical Image Segmentation is one of the primary and important phases of clinical diagnostics. Colorectal diseases are one of the few where the initial identification of cellular nuclei is plays an important factor for giving the remedies as soon as possible. Since it is a common disease among middle aged men, analyzing all the relevant reports related to the patient manually is time consuming. Colorectal diseases are curable once they are found out at the initial stage. It would be a good cause to find a way to segment these medical images with minimal human resources which will result in giving correct diagnosis on time.

Segmentation models have been said to be one of the integral elements of detecting objects in many industrial use cases. Utilizing a segmentation model to annotate these medical images might speed up the diagnosis phase resulting in a quick recovery of a patient.

ColoSeg is capable of acting as a fully fledged segmentation system to provide segmentation masks for not only colon nuclei but also for other party of the body while preserving user-anonymity. The results of integrating features from generalized segmentation architectures together with the field standard U-Net to make segmentations easy by using an ensemble model is yielded by this research.

Keywords: Segmentation, Ensemble models, Deep Learning, Data Science

Subject Descriptors:

- Applied computing → Medical diagnosis → Evaluation
- Computing methodologies → Machine learning → Machine learning algorithms → Ensemble methods