Clinical implementation of deep learning: Automatic contouring via U-Net architecture

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Thesis: github.com/matthewdeancooper/masters_thesis

Video overview: docs.pymedphys.com/background/autocontouring
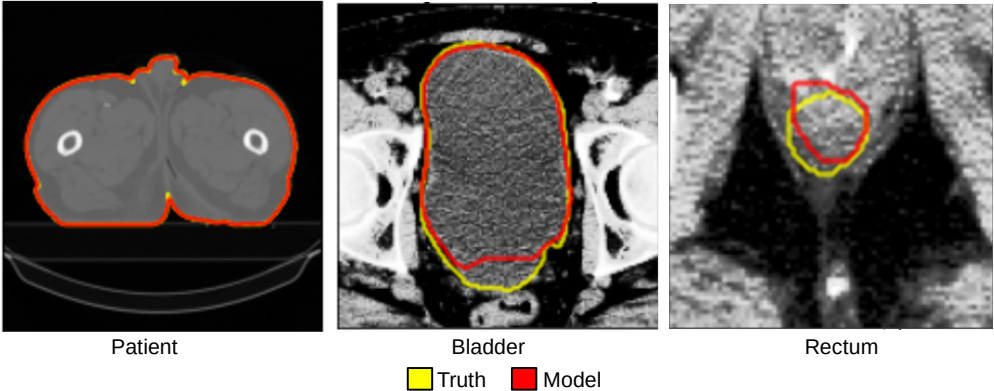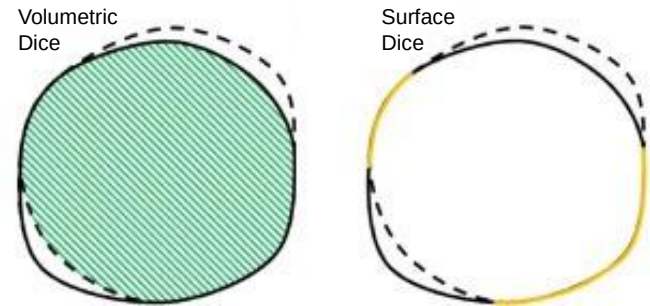
Table S1.A.i. Photon/electron EBRT high-risk failure modes for initial plan/chart review.

| Process	Failure mode	Cause
Tx plan	"Wrong" or inaccurate MD contours	Workflow/communication Issue, for example, attending MD does not review resident contours, MD does not clearly identify dose levels, incorrect CT dataset, fusion incorrect or with wrong image set, target motion not considered, wrong set of contours imported
Tx plan	"Wrong" or inaccurate dosimetrist contours	Human performance issue by dosimetrist or other, e.g. distraction or interruption, inattention, slip, lack of training, mistakes CTV for PTV, forgets to expand CTV to PTV, full structure not contoured (e.g. partial cord in Tx region)

Ford et al. TG-275. Med Phys 2020;47:6 (Redrawn)

Volumetric Dice

Surface Dice

Vaassen et al. Phys Img Rad Onc. 2020;13:1-6 (Redrawn)

Patient

Bladder

Rectum

☐ Truth ☐ Model

Prostate QA model: Average contour representations
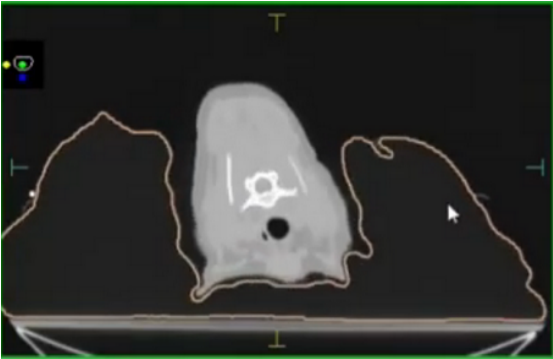
Canine vacuum bag model: Clinical case on Monaco TPS