



An automated method to generate patient-specific dose distributions for radiotherapy using deep learning

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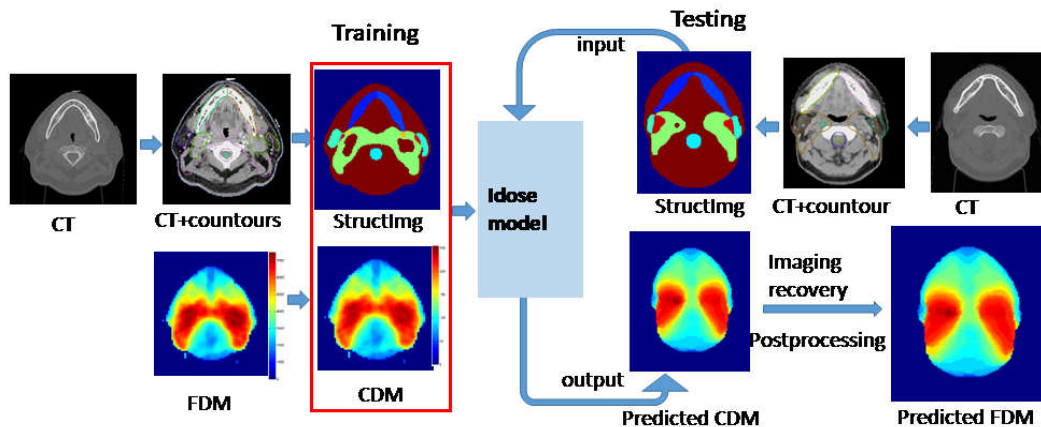


Figure 1. End-to-end framework of dose prediction with Idose

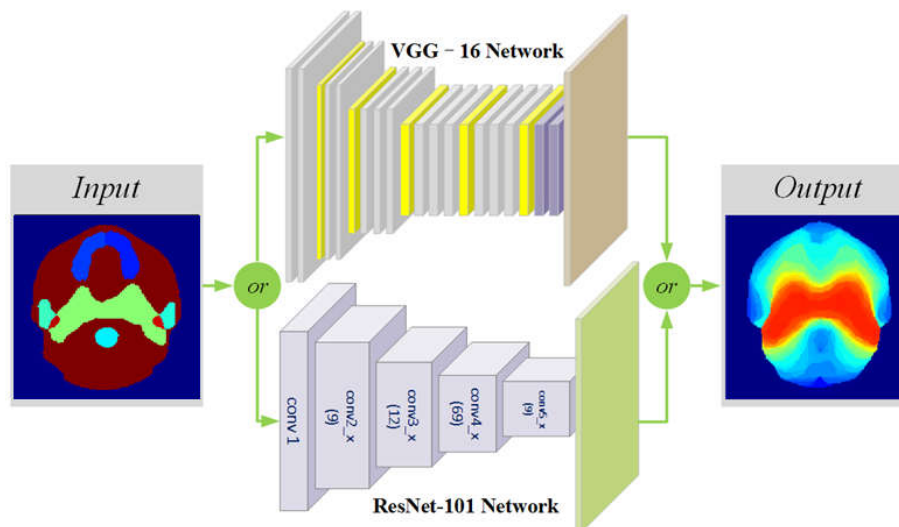


Figure 2. CNN modules of the Idose model

We developed an end-to-end Intelligent Dose (Idose) method to predict patient-specific dose distributions for radiotherapy planning based on prior knowledge with deep learning. Suitable convolutional neural networks (CNNs) with reasonable inputs and outputs were proposed and tested for the task. Our Idose model with ResNet is a robust method to generate patient-specific dose distributions for radiotherapy. It can be applied on a new planning CT with contoured OARs and targets to obtain the dose distributions slice-by-slice for planning quality assurance and automated planning.