MACHINE LEARNING FASTER AND SMARTER TREATMENT PLANNING

Machine learning is one of the fastest-growing areas of technology today. It has had a key role in advances in many fields, and its significance for the future of healthcare is potentially enormous. RaySearch already has a strong focus on automation and machine learning brings this to a new level. Through machine learning, smarter and faster software is created. Automatic treatment plan generation* and deep-learning organ segmentation* are the first applications.

MACHINE LEARNING FRAMEWORK

The machine learning model deployment process is independent from the RayStation version. This means that machine learning models provided by RaySearch will be added continuously and you won't need to wait for a new release to access them. You will also be able to train your own models for both segmentation and planning and share models with other clinics. The nature of machine learning makes it possible to share models without the inclusion of personal data and thus creates fantastic opportunities for knowledge sharing between cancer centers.

DEEP-LEARNING ORGAN SEGMENTATION

Auto-segmentation of organs in RayStation is set to reach new heights with the introduction of deep learning segmentation. The algorithm uses models that have been trained and evaluated on clinical data for different body sites. The GPU-powered algorithm is fast and produces consistent segmentation results.

How does it work? Select a pre-trained deep learning model and the organs are segmented automatically in less than 45 seconds. The output is standard geometries that can be manually adjusted if needed.

MACHINE LEARNING TREATMENT PLAN GENERATION

RaySearch has partnered with Princess Margaret Cancer Center to develop the world's first machine learning treatment plan generation module. Clinics can now get personalized treatment plans, benefiting from the experience of one of the world's leading cancer centers, generated in minutes by selecting a pre-trained machine learning model. One or multiple deliverable treatment plans can be automatically generated with varying target/OAR tradeoffs.

KEY FEATURES

- Generate contours of organs in less than 45 seconds with deep neural network models
- Generate personalized treatment plans in minutes
- Benefit from trained models from leading cancer clinics
- Train your own models
- Share models with other clinics

** Subject to regulatory clearance in some markets.*

"Machine learning is a natural fit for automating the complex treatment-planning process. It will enable us to generate highly personalized radiation treatment plans more efficiently, thereby allowing clinical resources or specialist technical staff to dedicate more time to patient care. We know that the RayStation algorithm generates high quality treatment plans that are deemed clinically acceptable by world experts with the majority of cases we have formally studied, showing automated plans are preferred or deemed equivalent to clinical plans."

– Tom Purdie, Medical Physicist,
Princess Margaret Cancer Center, Canada