

Press release

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Basic information

Name: Simon Skouboe Email: simsko@rm.dk Phone: 51861804

Department of: Clinical Medicine

Main supervisor: Per Rugaard Poulsen

Title of dissertation: Real-time motion-including dose reconstruction performed during radiotherapy treatment delivery

Date for defence: 16/1-2020 at (time of day): 14:00. Place: Auditorium C114-101, level 1, entrance C, Palle Juul-Jensens Boulevard 99, Aarhus University Hospital, 8200 Aarhus N

Press release (Danish)

Hurtige beregninger af stråledosis til bevægelig kræfttumor under strålebehandling

Nogle tumorer bevæger sig under strålebehandling. Det kan gå ud over dosisleveringen og kvaliteten af strålebehandlingen. I et nyt ph.d.-projekt fra Aarhus Universitet, Health, beregnes den faktisk leverede stråledosis under aktiv strålebehandling, hvorved behandlingskvaliteten undersøges. Projektet er gennemført af Simon Skouboe, der forsvare det d. 16/1.

Nogle tumorer bevæger sig under strålebehandling som følge af patientens vejrtrækning, hjerteslag eller andet. Det kan gå ud over dosisleveringen og kvaliteten af strålebehandlingen. I dette ph.d.-projekt blev tumorbevægelser målt under tidligere strålebehandlinger brugt i et internt udviklet computerprogram, der kan beregne den afsatte stråledosis i en bevægelig tumor flere gange i sekundet. Beregningerne blev valideret med bl.a. måleeksperimenter. Sidenhen blev det udviklede computerprogram indført i stråleklinikken. Her blev tumorens position og data fra strålemaskinen sendt til computerprogrammet, som løbende beregnede den faktisk leverede stråledosis under behandlingen. Dosis kan evalueres og bruges til at vurdere kvaliteten af behandlingen ud fra klinisk relevante metrikker. Det muliggør at stråleterapeuterne kan gribe ind og korrigere behandlingen, hvis den forløber suboptimalt.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 16/1 kl. 14:00 i auditorium C114-101, Aarhus Universitetshospital, Palle Juul-Jensens Boulevard 99, Aarhus N. Titlen på projektet er "Real-time motion-including dose reconstruction performed during radiotherapy treatment delivery". Yderligere oplysninger: Ph.d.-studerende Simon Skouboe, e-mail: simsko@rm.dk, tlf. 51861804.

Bedømmelsesudvalg:

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Press release (English)

Real-time calculation of dose to moving tumor during radiotherapy treatment

Some tumors move during radiotherapy treatment. This may compromise the delivered dose and the treatment quality. In a new PhD project, the actually delivered radiotherapy dose is calculated during

active treatment to gauge the treatment quality. The project was carried out by Simon Skouboe, who is defending his dissertation on 16/1.

Some tumours move during radiotherapy treatment, e.g. as a result of respiration, heartbeat or other bodily functions. The motion may compromise the delivered dose and the treatment quality. In this PhD project, previously recorded tumor motion traces were used to simulate radiotherapy treatments. During these simulations, the dose to the moving tumour was calculated in real-time with in-house developed software. The calculations were validated, e.g. with experimental measurements. Then, the software was implemented in the clinic. Here, the tumour position and data from the treatment machine was streamed to the software, which calculated the actually delivered tumour dose during patient treatment. The dose is evaluated on-the-fly. It can be used to gauge the treatment quality. This allows clinical personnel to intervene and adjust the treatment if necessary.

The defence is public and takes place on 16/1 at 2 PM in auditorium C114-101, Aarhus University Hospital, Palle Juul-Jensens Boulevard 99, Aarhus N. The title of the project is "Real-time motion-including dose reconstruction performed during radiotherapy treatment delivery". For more information, please contact PhD student Simon Skouboe, email: simsko@rm.dk, Phone +45 5186 1804.

Assessment committee:

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