

THE UNIVERSITY OF WESTERN ONTARIO
SCHOOL OF GRADUATE AND POSTDOCTORAL STUDIES

CERTIFICATE OF EXAMINATION

Supervisor



Dr. Jeff Chen

Co-Supervisor



Dr. Jerry Battista

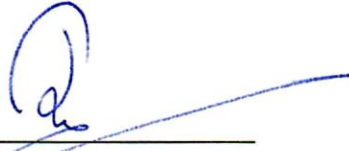
Examiners




Dr. Stewart Gaede



Dr. Kevin Jordan



Dr. Jinka Sathya



Dr. Cedric Yu

The thesis by

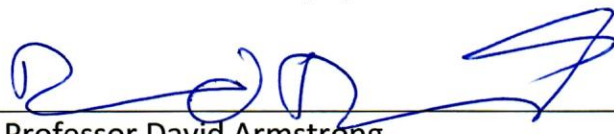
Michael MacFarlane

entitled:

Towards on-line plan adaptation of unified intensity-modulated arc therapy using a fast-direct aperture optimization algorithm

is accepted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

4/23/19
Date



Professor David Armstrong
Chair of the Thesis Examination Board