



Niklas GUNNARSSON

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PH.D. PROJECT DESCRIPTION

Developing methods for motion modeling of temporally and spatially sparse interventional image sequences.

Keywords: Deep-learning, dynamical modeling, image registration, generative models.

EDUCATION

Ph.D | *Machine Learning* NOV 2018 - PRESENT
Uppsala University, Uppsala, Sweden

Lic. of Philosophy | *EE with Specialisation in Signal Processing* NOV 2018 - DEC 2021
Uppsala University, Uppsala, Sweden

Master of Science | *Engineering Physics* AUG 2008 - JUN 2013
Uppsala University, Uppsala, Sweden GPA: 4.6/5.0

Exchange student SPRING 2012
Seoul National University, Seoul, South Korea

WORK EXPERIENCE

Software developer | *RaySearch Laboratories AB* AUG 2015 - NOV 2018

- Developer for the next-generation information system in radiotherapy.
- Scrum-master

Software developer | *Sectra AB* AUG 2013 - AUG 2015

- Developed a cross-enterprise product used for sharing medical images and data.

RESEARCH PAPERS

Online learning in motion modeling for intra-interventional image sequences. 2024
TBD

Diffusion-based 3D motion estimation from sparse 2D observations. 2023
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4673120

Unsupervised dynamic modeling of medical image transformations. 2022
<https://ieeexplore.ieee.org/document/9841369>

Learning a deformable registration pyramid. 2020
https://link.springer.com/chapter/10.1007/978-3-030-71827-5_10

Registration by tracking for sequential 2D MRI. 2020
<https://arxiv.org/abs/2003.10819>

PATENT APPLICATIONS

Image Registration in Treatment Planning. 2021
United States Patent Application US-20210268313-A1.

Methods of Adaptive Radiotherapy. 2021
United States Patent Application US-20240001148-A1.

Conditional diffusion-based image reconstruction. 2023
UK Patent Application GB2319531.6.

TECHNICAL SKILLS

Python, Tensorflow, PyTorch, Keras, C#, .Net, L^AT_EX, Git,