



# Inaugural lecture

## Rasmus Reinhold Paulsen

# AI Driven Medical Image Analysis

**Friday 6th October 2023 from 15:00 to 16:00**





## AI Driven Medical Image Analysis

DTU Compute is pleased to invite all interested parties to welcome Rasmus Reinhold Paulsen as professor in Medical Image Analysis.

Rasmus's inaugural lecture will take place on:

Friday 6th October 2023

from 15:00 to 16:00

Building 101, the Glass Room

Anker Engelundsvej

2800 Kgs. Lyngby

The lecture is followed by a reception from 16:00 to 17:00.

We look forward to celebrating Rasmus and seeing all of you.

Best regards,

DTU Compute

Jan Madsen, Professor, Head of Department

DTU Compute  
Richard Petersens Plads  
Bygning 324  
2800 Kgs. Lyngby

## Summary

The last decade has seen an explosion of new machine learning methods, where the most advanced methods go under the term “AI – Artificial Intelligence”. In this presentation, I will give an overview of how modern AI approaches can drive research within medical image analysis and ultimately provide solutions to the benefit of society.

My current research focus is on cardiovascular risk prediction from large 3D image databases. The close collaboration between my group at DTU and Rigshospitalet enables us to train large deep learning models on truly unique image databases with associated morbidity and mortality data. Our goal is to uncover new or under-explored image biomarkers that can aid in the early detection of cardiovascular risks such as, for example, stroke or cardiac death.

It is not trivial to use modern deep learning approaches on complex 3D data. We are exploring novel ways of representing 3D data including implicit surface descriptors, where our goal is to create compact and information-preserving models that can adapt to and harness the power of deep learning frameworks. By reducing complex data into low dimensional latent spaces, we can optimize networks to focus on the image features that are most significant for a given clinical scenario.

This truly interdisciplinary research can only be successful in an environment where computer scientists, and medical professionals collaborate on a daily basis. Our hope is that our research results can be used in future patient diagnostic strategies and thereby improving patient outcome.

Finally, I will try to explain how these collaborations can be formed and how education and early student involvement are crucial in forming a society that can adapt to the ongoing rapid technological change.