

# Master Thesis (M.Sc.) in (medical) physics or computer sciences

## AI-based risk assessment of lymph node metastasis in prostate carcinoma patients

*Department of Radiation Oncology, Prof. Dr. Dr. J. Debus*

Start date: Oct 2022

As part of the CLINIC 5.1 project\*, the department of radiation oncology at Heidelberg university hospital is developing new forms of AI-based decision support for physicians. The high-quality treatment data of cancer patients acquired at our hospital enables AI algorithms to be trained efficiently and effectively. Using the example of prostate carcinoma, the comprehensive goal of CLINIC 5.1 is to work out an intelligent application of these data for decision support in clinical practice, based on previous therapies, diagnoses and studies in all phases of diagnostics, therapy recommendation and therapy implementation.

In this context, we offer a master thesis project starting in autumn 2022. You have a background in neural network (NN) techniques and a strong interest in clinical applications? We provide you the opportunity to combine both: you have the chance to apply your AI knowledge to well-defined clinical data sets addressing a relevant open clinical question. The goal is to develop a suitable AI solution to predict the risk pattern of lymph node metastasis in prostate carcinoma patients. With such information, a personalized treatment decision can be made which is expected to improve treatment outcome.

### **Tasks and responsibilities:**

- You work in a multidisciplinary research environment involving clinicians and physicists
- You identify a NN solution suiting the given clinical question and available clinical patient data
- You develop and verify a NN-based tool for the assessment of lymph node metastasis risk

### **Prerequisites:**

- Very successfully conducted studies in (medical) physics or computer sciences
- Profound knowledge in data statistics, experience with AI algorithms and an interest in clinical image data processing
- Very good communication skills in English
- Structured and solution-oriented working style, reliability and self-initiative

Contact:

*Dr. Julia Bauer - Department of Radiation Oncology / University Hospital Heidelberg*

***julia.bauer@med.uni-heidelberg.de***

*06221-5636569*

**Apply now by sending: a motivation letter, your CV, and your transcript of records**

Earliest start date: Oct 2022

*\*More information on the CLINIC 5.1 project can be found here:*

[Digital Technologies - CLINIC 5.1 \(digitale-technologien.de\)](https://www.digitale-technologien.de/CLINIC5.1)