

Doctoral Candidate 2 - Deep learning-augmented super resolution reconstruction for accelerated relaxometry

Host Institution	Siemens Healthineers, Belgium
PhD enrolment	University of Antwerp, Belgium
Primary Supervisor	Dr. Thomas Janssens, Siemens Healthineers
Subject area	Simulations and modelling, Programming AI software

About this doctoral project and your tasks

You will develop a novel **super-resolution reconstruction (SRR) framework for relaxometry**, extending a model based SRR framework that was recently developed within our consortium (*Beirinckx et al., Comput Med Imaging Graph 100, 2022*). The aim is that the framework will, within minutes, directly estimate isotropic, high resolution relaxation parameter maps from a set of differently oriented T1/T2-weighted multi-slice images, while accounting for motion. Thereby, we will target a **physics-aware** (e.g., recurrent inference machines or RIM) Deep Learning approaches, in which the above-mentioned model-based SRR is integrated.

Your tasks will include:

- Develop a computationally efficient framework for motion compensated SRR relaxometry
- Implementation of the developed methodology as a working syngo.via Frontier prototype
- Benchmark the method in a clinical setting in the context of Multiple Sclerosis

Foreseen secondments

For this project, we foresee secondments to:

- Prof. dr. Ben Jeurissen (5 months) at **University of Antwerp** (Belgium)
- Prof. dr. Matthan Caan (1 month) at **AMC Amsterdam** (The Netherlands)
- Prof. Pieter Van Dyck (5 months) at **Antwerp University Hospital** (UZA, Belgium)

About the host organisation

Siemens Healthcare is a supplier of medical solutions. We have considerable expertise and innovative capacity for **diagnostic and therapeutic technologies**, as well as information and system integration technologies. Siemens Healthcare NV in Belgium has around 300 employees active in this sector and consists of different business areas. Within Siemens Healthcare, R&D is spread over centralised R&D teams within Global Headquarters and Regional Collaboration teams. Belgium is part of the Regional Collaboration Team for EMEA which counts around 40 R&D professionals (not including PhD students), working in close collaborations with end-users. In this project we will work closely together with the University and University Hospital of Antwerp.

About the offer

- The selected candidate will be employed by Siemens Healthineers for **36 months** on the MSCA-DN project.
- Doctoral candidates are offered a **competitive remuneration** based on the MSCA allowances and the regulations of the organisation. Siemens Healthineers has received the following EU-grant to recruit a Doctoral Candidate (DC): monthly Living Allowance € 3.400; monthly Mobility Allowance € 600; and monthly Family Allowance € 660 (only if applicable). Please note that the final monthly, gross salary will result from deducting (from the mentioned amounts) all compulsory national labour taxes (social security, etc.) to be borne by the employer. Moreover, funding is available for technical and personal skills training and participation in international research events.
- **Expected start date:** between April and September 2025. We encourage last-year master students who will graduate by this time to already apply.

More information is available in the [general information document](#) for IQ-BRAIN positions.

Specific profile and requirements

- Your profile aligns with the [general requirements and eligibility criteria](#) of the IQ-BRAIN project.
- You have a master's degree in **biomedical engineering, physics, computer science or related fields** (or will have by the time of your appointment).
- Background in **magnetic resonance imaging (MRI) and/or scientific computing** is appreciated.

More information

For additional information about the research project, contact:

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