

Meet Siemens Healthineers

Siemens Healthineers: Our brand name embodies the pioneering spirit and engineering expertise that is unique in the healthcare industry. The people working for Siemens Healthineers are totally committed to the company they work for, and are passionate about their technology. In this section we introduce you to colleagues from all over the world – people who put their hearts into what they do.

Daniel Giese, Ph.D.

Daniel Giese studied physics and biomedical engineering in Germany at the Karlsruhe Institute of Technology (KIT), and in Grenoble, France, at the école nationale supérieure de physique, électronique et matériaux (ENSPG) and at Université Joseph Fourier (UJF) de Grenoble. After writing his diploma thesis in cardiovascular MR imaging in Freiburg, Germany, in 2008 (under Professor Hennig), he pursued a Ph.D. at King's College London (KCL), UK (under Professor Kozerke and Professor Schaeffter). This included a 1.5-year research stay at ETH Zürich in Switzerland. After a postdoc at KCL, Daniel moved to the University of Cologne, Germany, in 2013, where he later led an independent research group in MRI physics and obtained his Habilitation (postdoctoral lecturing qualification). He joined Siemens Healthineers in December 2018 as an application developer in the CMR Predevelopment Team, remaining active as a researcher while contributing to several widely used research packages. As Senior Key Expert he is responsible for driving a variety of predevelopment activities, including CMR at 0.55T.



How did you first come into contact with MRI?

My studies in Grenoble included several compulsory internships. I really wanted to go abroad and was fortunate to win a research internship at the University of Queensland in Brisbane, Australia, where I worked in Professor Graham Galloway's lab. My project consisted of building a torso coil for a human 4T system. I was incredibly impressed when I was able to acquire images (in a phantom) with a receiver coil that we had built and soldered from copper wires and some electronic modules within a few weeks. This was 2006 and it sparked my desire to continue working in the field of MRI.

What do you find motivating about your job?

Working in the cardiac MRI predevelopment group at Siemens Healthineers allows me to make a real impact in CMR. The interval between having an idea and seeing results in patients around the globe is as short as I can imagine it could ever be. This is partially because of the infrastructure, tools, and knowledgeable colleagues at Siemens Healthineers. But it's also thanks to our collaboration partners, who are highly motivated to try out new methods and give us feedback. This is crucial for bringing novel ideas into clinical routine. Another very motivating aspect of my job is my continuing active involvement in research societies such as SCMR, and the possibility to supervise and support talented young students during their studies and research projects.

What are the biggest challenges in your job?

The biggest challenge is managing my time effectively. I cannot convert every idea into reality. Although I do write down all my ideas in a notebook, I can only pursue a fraction of them. Another challenge is that my desire to try and understand the basic physics might slow down the successful completion of some projects.

What are the most important developments in CMR?

I think the most important acquisition and reconstruction developments in CMR are related to handling motion and acquiring quantitative images. Breathing and cardiac motion remain two of the biggest challenges in CMR, especially given the main assumption that ECG and breathing cycles are periodical. These assumptions, combined with the intrinsically long acquisition process in MRI, make the field of motion handling very active. From the development and introduction of the MR navigator in the early 1980s, to novel multidimensional and self-gating approaches combined with motion-compensated reconstruction algorithms and deep-learning approaches, the sector has made an incredible leap toward unprecedented image quality. In a world where AI is increasingly used to interpret data, I think quantitative imaging is compulsory. Quantitative imaging goes together with a standardized acquisition, which is simplified by automation to reduce variance. In summary: fast, motion-robust, accurate, and quantitative CMR is the future.

What would you do if you could spend a month doing whatever you wanted?

I lived in Sub-Saharan Africa (Guinea, Niger, and Zimbabwe) until the age of 12. I'd like to revisit many of the places from my childhood with my family. And since one of the reasons I'm in my current job is to improve access to care, I am convinced that a trip like this would also allow me to add new ideas to my notebook – so I can keep working on predevelopment projects in this exciting field.