

Novel approach to white matter filtering

We introduced new advanced methods for filtering brain scans. Using them, we managed to improve the detection of activity in the white matter of the brain.

We developed a novel approach for the detection of activity in the white matter of the brain, which performed better than existing methods. We also adapted and improved an existing method making it up to 400 times faster. This greatly improved its usability and enabled its application to much larger volumes of data.

White matter constitutes approximately 50% of the brain, and serves to connect distant brain regions. The activity in this part of the brain is especially hard to detect, due to the weak signal it produces in the magnetic resonance imaging (MRI) scanners. Because of that, there has not been a lot of research done in this area, and it has only recently started to emerge as its own field. The study of white matter is of great importance for understanding the way in which the brain functions, as well as for the treatment of numerous illnesses. We believe that our work can be helpful in unraveling this puzzle.

Although our work was centered in biomedical engineering, the methods we used were based on the emerging field of signal processing on graphs (networks). These methods have wide-ranging applications in multiple fields but have recently found their use in MRI brain studies.