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Combining non-invasive methods to guide brain surgery in children with epilepsy

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Identifying the areas of the brain involved with language is a paramount task in children with epilepsy that are candidates for surgery. The risk of injuring these areas is increased because of the higher incidence of language relocation in these kids. Invasive techniques are better for identifying language but difficult to apply in children; non-invasive technologies face many limitations such as patients moving while performing the scan, not coping with tasks or the natural immaturity of neural networks.
To cope with some of these limitations, we are conducting research combining two distinct non-invasive modalities: resting-state functional MRI and functional Near Infrared Spectroscopy.
We developed a simple method to couple both signals and correlate temporal and spatial activations to find which areas of the brain are involved in speech. Further testing of this method is being conducted in patients, with the objective of increasing accessibility to studies and, ultimately, safer surgeries.

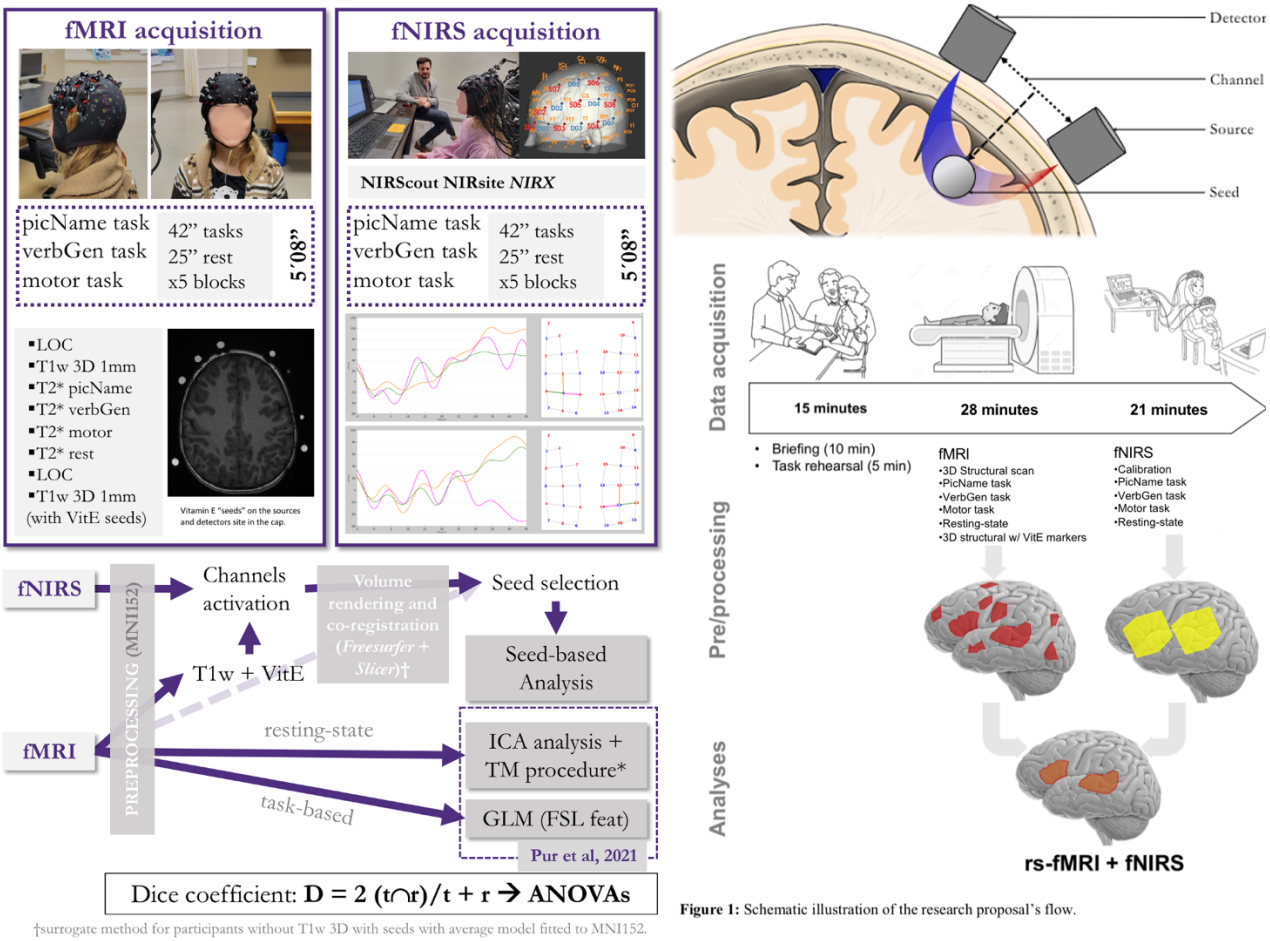

Figure 1: Schematic illustration of the research proposal's flow.

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