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Quantifying symptoms of movement disorders using inertial measurement sensors

Clinical evaluation plays a major role in the diagnosis of movement disorders. During clinical evaluation the presence and severity of a variety of symptoms is assessed. In an effort to standardize this evaluation rating scales are employed. However, these scales are relatively coarse and their reliability and reproducibility depends on the expertise of the evaluator, possibly hampering diagnosis and monitoring in patients. In this talk, I will review some of the studies that we did over the past years in which we studied the objective assessment of different symptoms of movement disorders using accelerometers, gyroscopes and magnetic sensors. Some of the symptoms that we investigated are tremor, bradykinesia in Parkinson's disease (PD) and poor coordination in ataxia and developmental coordination disorder. I will also present some first results of long-term monitoring of tremor at home.